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ANCE OF BRITISH INDUSTRY SERIES

MAN AND COMMERCE

BY

R. S. BRIDGE

ILLUMINED BY THE ROMANCE OF THE PAST, OUR DAILY LIFE BECOMES ITSELF A ROMANCE WORTH LIVING . . . . . .

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MAN AND COMMERCE

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THE ROMANCE OF BRITISH INDUSTRY SERIES.

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ERNEST H. SHORT

FOREWORD.

This book is an attempt to tell the story of our commerce, a subject which ought to have a peculiar interest for each one of us, seeing that it touches our everyday life in so many ways.

After all, commerce is a matter of civilization. The primitive races of mankind know not commerce. They may enjoy life in their own way, but of what we understand by "civilization" or "human progress" they have no conception.

It is because of our past history, because we have been and are a great commercial nation that it is now possible for us to live decent lives as respectable citizens in a well-ordered community, and to enjoy the various blessings of civilization of which our forefathers hardly dreamed. We have gained immeasurably by our commercial activity. Therefore the study of our commercial history and progress is a study of human interests. As such it needs no apology—"the proper study of mankind is man."

We lay no claim to originality of matter in this book. In the purely historical portions of it, we have tried to make an adequate use of contemporary sources. In this particular we wish to express our indebtedness to "English Economic History: Select Documents"—an invaluable volume published by G. Bell and Sons.

We also gratefully acknowledge the courtesy of Mr. H. C. E. Newham, of Hull, in allowing us to make full use of the matter and plans in his admirable yearly publication, "The Port of Hull Annual."

R. S. B.

Nottingham, Nov., 1920.

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PART I.

THE "MEDITERRANEAN" PERIOD OF COMMERCE.

EARLY COMMERCE IN OUR ISLANDS.

For many years scholars have been working out the ancient history of these islands, and many discoveries have been made, so that we now know a good deal about the arts, crafts and industries of prehistoric times. In fact, recent research seems to show that there was freer intercourse and more exchange of goods between our ancestors and the people of the continent of Europe than has hitherto been supposed. Of course, we are not to imagine anything like regular industries, or trade on a large scale. But at any rate the ancient Britons knew a good deal about, for instance, the working of bronze. This metal is a mixture of copper and tin, both of which are found in our islands. They could manufacture excellent bronze axes or "celts," and could ornament bronze by enamelling its surface. British bronze implements were traded in Scandinavia and Denmark.

The finds in the pre-historic lake-village of Glastonbury and elsewhere prove that the Britons were early accustomed to pottery-making and the art of weaving. Irish gold was well-known throughout Western Europe and must have been mined in some quantity, as the remains of gold horse-armour have been discovered. At the beginning of our era imports to these shores consisted of ivory, coral, amber, &c.; in return we could export gold, hides, iron, slaves and tin.

TIN.

The tin industry of Cornwall is a very ancient one, and the Phoenicians are supposed to have taken part in it. At all events, in the early iron age there seems to have been a more or less regular trade in tin with Mediterranean countries. We know the route by which it was carried on. The tin was mined in Cornwall, and taken to the Isle of Wight (possibly at low water), where the Mediterranean merchants bought it. It was then taken over to Gaul, and sent to Marseilles via the Rhone valley. The whole journey occupied thirty days.

After the Romans discovered, or rather re-discovered, the tin islands north of Spain, the trade in Cornish tin appears to have declined.

THE ROMANS IN BRITAIN.

When the Romans conquered Britain and settled down here, they must, then, have found at least a primitive organisation of trade of one kind or another. Though doubtless they developed this, still we must look upon the Roman occupation mainly as military. And this indeed seems to be proved by the fact that most of the Roman towns that have been excavated, or whose history is known, have been found to be military outposts. Nevertheless, commerce was not neglected. Considerable progress was made in mining. Copper was worked in Wales, lead in several places such as Flintshire and the Mendips, iron in the Forest of Dean and the Weald of Kent, possibly silver, and of course tin in Cornwall. Roads, forts, amphitheatres, pigs of lead, refuse of lead mines, all testify to Roman activity in this direction. Then, too, corn was sent over to Gaul, and there were minor luxuries from elsewhere, such as oysters from Rutupiae (Richboro').

But it was in the road system that the Romans left a permanent influence on the commerce of Great Britain.

TRANSPORT.

In the days before the Roman occupation of Britain, when so much of our country was forest and undrained fen-land, such means of communication as were necessary were merely tracks along the tops or ridges of the higher ground. Many of these prehistoric tracks can be traced to-day by their line of encampments and burial places (tumuli), and many were used by the Romans just as they found them, while others were repaired and improved.

To this system of trackways the Romans added an elaborate road-system of their own, which though mainly for military needs must have been even then valuable for transporting goods. Even to-day the skill with which these roads were planned and constructed is shown by the fact that many stretches of our main roads are Roman in origin, and their direction is often followed very closely by our modern railways. The Romans, in fact, built and planned their roads scientifically. They saw that a proper system of communication in these islands must be based on the linking up of the main rivers and seaports, and that the four estuaries of the Thames, Severn, Humber and Mersey are four gateways into the heart of the country. By joining, so to speak, these four corners together, they obtained their main or " trunk " lines of communication. And so we have as the basis of the Roman road-system :

1. Watling Street, from Dover to London, thence to Chester in a N.W. direction.
2. The " Fosse-way " from Exeter and the S.W. to Lincoln and the Humber.

3. The Great North Road from London via Peterborough to York and Newcastle.
4. A road from London to S. Wales via Swindon, Bath and Abona, near Bristol.

Then cross-roads were added, to join the trunk lines. For instance, the so-called "Sarn-Helen" ran from Carmarthen due North to the Welsh coast near Bangor; another ran from York to the West coast straight across the Pennines; another from Newcastle via the Tyne Gap to Carlisle, and so on.

You see the Romans had a very good notion of using the easiest way across country: they often found what we now call "the line of least resistance."

SOMETHING FOR YOU TO DO.

On an outline map of England and Wales insert the Roman roads and stations mentioned above.

A few years ago a scheme was put forward for improving our canal system. The basis of the idea was the linking up by canal of the four great estuaries already mentioned. This only shows how essentially practical and modern the Romans were. No doubt the rivers must have been used to supplement the road transport system, and when the Romans left Britain for good, and their roads were allowed to decay, river transport must have become even more valuable. Meanwhile let us note that many settlements must have grown up at road-junctions, and the crossings of rivers at fords, bridges or ferries, and at, or near, springs.

And who saw to the upkeep of the roads and bridges? The people in the neighbourhood: often the local landowner, often the local religious house or monastery, for in those days it was a pious deed thus to aid the poor traveller, who in his turn might be expected to offer up a mass at one of the numerous

chapels erected on mediæval bridges. Occasionally, as at St. Ives, Huntingdon, or Wakefield in Yorkshire, one sees relics of these interesting chapels; at Monmouth there is also an example of a defensive embattled bridge tower. In some cases the little bridges, just big enough for a packhorse and its attendant, survive. But, generally speaking, such erections have long ago been destroyed as nuisances to traffic. Too often, also, the upkeep of bridges was neglected, and bridges would collapse, roads become impassable with mud, and then the merchant would have to go many miles round or wait for better weather to dry up the roads. We even hear of Members of Parliament turning up late for the opening session because of such road delays. And then there was the danger from foot-pads, cut-purses or thieves, or what Antonio in "The Merchant of Venice" calls "land rats and water rats," who frequented the woods and lonely moors en route. Edward I.'s well-known Statute of Winchester ordered a space of 100 feet to be cleared on either side of the road, so that "there be neither dyke, tree nor bush whereby a man may lurke to do hurt." One would think that the dangers of transport must have added to the cost of merchandise.

For these reasons, then, goods were sent often by rivers. And so navigation on these was kept as free as possible and Acts were passed to prevent people building dams or weirs, while Magna Carta expressly ordered all weirs to be destroyed on the Thames and Medway.

Inland or river ports were much more common in those days, owing to the shallow draught of the mediæval vessels. On a list of ports furnishing ships for Edward III.'s 1347 Calais expedition, we find York contributing a ship, Maidstone two and Colchester five. Now this list of ships is very instruc-

tive and throws much light on the distribution and relative importance of our ports in the Middle Ages. In it the English fleet is divided into a Northern fleet and a Southern fleet.

The North Ports supplied 217 ships and over 4,000 sailors; the South ports furnished 490 ships and 9,630 sailors. The average crew to a vessel works out at 19 men. We cannot quote the list in full, but here are some of the ports with their respective contingents of ships:—

South (and West).			North (and East).		
London	25	ships	Newcastle	17	ships
Dartmouth	31		Hull	16	
Fowey	47	(770 crew)	Lynn	16	
Bristol	22		Hartlepool	5	
Plymouth	26		Yarmouth	43	(crew over 1,000)
Southampton	21		Mersey	1	
Swansea	1		Harwich	14	
Cardiff	1		Ipswich	12	
Loo	20				
Dover	16				
Sandwich	22	Cinque Ports			
Winchelsey	21				
Rye	9				
Romney	4				

There are several points of interest about this list. Notice, for instance, the relative unimportance of the Bristol Channel ports, Cardiff and Swansea, which have grown up only in modern times with the development of the South Wales coalfield. Notice, too, that the Mersey ports can supply only one ship, that Newcastle, Hull and Hartlepool were not nearly as important relatively then as now, and that Sunderland is not mentioned at all. Yarmouth's great im-

portance was no doubt due to its fishing industry, which even to-day is the largest in the British Isles. You see, also, that some of the Cinque Ports appear to be already on the decline, and on the other hand that the little fishing ports of the south-west coast were of great value in the Middle Ages. Dartmouth, of course, is the port from which came Chaucer's "shipman." The list contains some foreign ships—Bayonne, for instance, supplied 15 ships with an average crew of nearly 30. You should try to think out why a French port should contribute ships to an English Navy which was making war on France.

SOMETHING TO DO.

Draw a map of England, and on it insert these ports. Re-write the list of ports, as far as possible placing them in order of their present-day importance. Account for the decline of such ports as Romney, Rye, Ipswich, and Lynn.

Read Chaucer's description of "The Shipman" in the prologue to the "Canterbury Tales."

THE MANORIAL SYSTEM.

With the departure of the Romans, Britain relapsed into a state of chaos. Commerce and industries came to a standstill, and for many years we remained a purely agricultural country.

We do indeed hear of King Alfred's interest in the voyages of Othere; we know that Ethelred's laws decided that a merchant who had made three successful sea voyages was to be advanced a step in the social scale and become "of thegn-right worthy"; and tradition asserts that King Offa of Mercia agreed with the great Charlemagne as to the treatment to be accorded to the merchants of their respective kingdoms. Nevertheless, Britain remained in fact an

agricultural country which produced sufficient for her own simple needs—and that is about all we can say.

Of course, there was a certain amount of local trade: the services of carpenter and blacksmith, for instance, were always in demand, and the one had to procure his wood and the other his iron. Such trade naturally gathered where population was thickest, and population gathered at places which could show some natural advantages. For example:

1. Round the dwelling of some powerful nobleman (for purposes of protection).
2. At cross roads or places covering or "commanding," as we say, some natural route, such as the crossings of rivers by ford (Oxford), or by bridge (Stourbridge), or a pass through two hills or between the hills and the sea (Newcastle). Some of these places were originally Roman stations (e.g., Chester), for the Romans had a fine eye for what we call "strategical" positions.
3. River ports, often a considerable distance up the river, so as to make inland trading easier (York, Nottingham).
4. Seaports.
5. Along foot-hills (e.g., Mendips), for water supply.

When William the Conquerer instituted his famous Domesday Survey in 1086, in order to find out the exact value of all the land and holdings in the kingdom, he recorded in the Domesday Book a mass of information which tells us all about the conditions of life of the then existing population. The idea of the "manorial system," as it was called, is something as follows:—

All social rights and duties were based on *land*. The King owned all the land, but granted portions of it to his followers, who in their turn would

grant portions from their estates to lesser folk, and so on. The rent paid for land was not money, as it would be nowadays, but military and other service. Each estate would generally consist of (a) the lord's "demesne," i.e., his dwelling house and private grounds; (b) the allotments of his followers, "villeins," or whatever they might be called, who in return for their allotment and house owed service to their lord and paid him rent in the form of, say, so many eggs at Easter or so many geese at Michaelmas, and so on. These allotments were strips of land divided from one another by "balks" of turf, and were worked in common, so many villeins providing a plough, so many the oxen, and so forth; (c) the "commons," on which the landowner's tenants might freely pasture their cattle and swine.

The ground was cultivated under the three-field system, that is to say, field A might be sown with wheat, B with barley; field C would have nothing on it, or lie "fallow," as we should say. Next year perhaps C would have wheat, A barley, and B would lie fallow. In this way every three years a strip of land would get rest and time to recover. This was very needful, as very little was known about manuring in those days. Such a system appears to us wasteful, but nevertheless maintained itself until half-way through the 18th century.

Gradually, important changes occurred. The manorial system decayed, partly because of the introduction of money as payment for rent, partly because this money allowed the landowners to hire free and more willing and satisfactory labourers, and partly on account of sheep farming, which became so profitable that it largely superseded agriculture, especially as the shortage of labour was so serious after the Black Death in 1348. You must remember especially that wool was by far our most important source of

wealth throughout the Middle Ages. Much of our country was, and is now, suited for sheep rearing, and there was a heavy demand all the year round from the Flemish weavers for our raw wool. Britain was, in fact, the mediæval Australia. A stoppage of the export of wool from these shores meant unemployment and starvation for the greater bulk of the Flemish population, just as in the American Civil War the prevention of the export of cotton from the U.S.A. brought starvation to the cotton workers in Lancashire. Many of the abbeys owned large flocks of sheep, the best breeds of which came from the Eastern and more Southern counties, such as Cambridge, Norfolk, Suffolk, Wiltshire, Herefordshire and Gloucestershire (the Cotswolds). Although the Flemings were far ahead of us in their knowledge of dyes—made from the madder root, which was largely cultivated in Flanders—and in the weaving of fine cloths, yet the English in their own cottages worked, under what was known as the "domestic system," great quantities of the heavier and coarser kind of cloths. Many localities "specialised" in different kinds of cloth. Thus the little village of Worstead gave its name to the worsted industry, and Witney made blankets.

Norwich became the second largest town in the kingdom. Gradually these manufactures increased, so that by the end of the Middle Ages we were no longer exporting raw wool, but manufactured woollen goods as well. We were, in fact, beginning to be an industrial as well as an agricultural country. To-day we commemorate our mediæval wealth in wool by naming the seat on which the Lord Chancellor sits in the House of Lords—the "woolsack."

SOMETHING TO DO.

Draw a plan and make a model of the estate of a feudal "lord of the manor." Imagine yourself a villein of the Middle Ages, and write a diary of your day's work.

For an account of social life under the Norman Manorial System read:—

Scott's "Ivanhoe." (Chapter 2 has a good description of a Saxon demesne.)
Kingsley's "Hereward the Wake."
Lytton's "Harold."

Life in a mediæval monastery is illustrated in Carlyle's "Past and Present" (book 2). The language will not be easy for you to understand, so get your teacher to read and explain the account.

The hardships and social life of the labouring classes of the 14th century are depicted in the poem, "Piers Plowman."

Taking everything into consideration, then, it is evident that our early commerce was more in the nature of local exchanges, and trade overseas must have been small until the following events brought us into touch with the world outside and opened up our trade with foreigners.

THE NORMAN CONQUEST.

First, then, the Norman Conquest must have greatly stimulated our trade by bringing us into much closer contact with the towns of the Continent, and by bringing foreigners over here. For instance, Norman masons and builders had to come over here to show us how to build stone castles and churches. Again, Henry I. allowed Flemish weavers to settle in South Wales; Henry II. inherited possessions in France and brought us into still closer touch with

that country. Then, of course, there were always the unpopular envoys of the Pope over here, collecting money which our churches and monasteries owed the Pope; and there were the equally unpopular Jewish moneylenders, who were under the special protection of the King. All this meant an ever-widening circle of trade.

THE CRUSADES.

Secondly, the Crusades brought our people into direct touch with the rich trading cities of the Mediterranean—Venice, Genoa, Pisa—which were already sending their vessels westwards through the Straits of Gibraltar to the coasts of South England, France and Holland.

THE GROWTH OF THE HANSA.

Thirdly, in the north of Europe was growing up a great commercial power—the league of German free cities which ultimately became known as the Hanseatic League, or the Hansa, and which traded largely with the ports of our Eastern coast. Thus our commerce began to be less local and more international in character.

THE BEGINNING OF MARKETS AND FAIRS.

Now this increase of trade meant that trade had to be carefully regulated, for the more complicated a thing is the more necessary it is for everything to be carried out in due order. Hence markets and fairs arose, because the merchants, buyers and sellers, would find it much more convenient to have a common meeting place where they could find each other without difficulty, and talk over and arrange their business. The next step was for

foreigners to come to the same fairs for similar reasons, and so fairs became international. We know of many famous fairs of this kind in the Middle Ages —those of the Flemish towns of Bruges, Ypres, Antwerp, for example; those of France; the well-known fair of Novgorod in Russia; and above all, in our own country two of special importance— St. Bartholomew (Smithfield) and Stourbridge.

A TYPICAL FAIR.

At such a fair one might have seen merchants from Brabant, inspecting bales of wool brought to the fair by farmers of Norfolk, Cambridge, Lincoln, and so on. Or, perchance, Venetians and Genoese displaying their Italian silks and spices brought from the East. Here is a Portuguese with samples of olive oil; there a Spaniard with beautiful leather from Cordova or steel blades from Toledo. Or, if we leave the busy throng of merchants and betake ourselves to the outskirts of the gathering we can enjoy all the fun of the fair. True, there are no swingboats and roundabouts, but there are jugglers and acrobats, tumblers and fiddlers, men with performing bears and the usual crowd of beggars, and, we suppose, pickpockets and cut-throats. There are still annual fairs in some old English towns, but they are a mere shadow of their former commercial importance.

You must not imagine, however, that any town necessarily had a market or fair. Probably the great local landowner owned the rights of market, which meant that the town would in some way have to pay the landowner for permission to hold a market. Or perhaps a town had to obtain permission from the Crown to hold a fair, and the Crown might not give permission if it was found that the fair would be likely to interfere with fairs in neighbouring towns. The fact

is that in these days trade and commerce were under strict control—the control of the Crown (as supreme landowner), or of the great landowners, which often included religious bodies such as monasteries. And all these people wanted money for the sale of these charters and privileges, from custom duties and tolls on merchandise, and from the fines which were inflicted for breaking trading laws. And there was a host of officials to see that you were duly punished if you broke the laws. The police system of the Middle Ages was by no means inefficient, and the officials saw to it that you gave proper measure, that your tolls were duly paid, that your wool was weighed at the public weighing machine, and so on. If you were a baker and your loaf was of inferior flour, or of poor weight, you might find yourself ordered to be dragged round the town on a hurdle with the loaf hanging round your neck; if a brewer, and your beer was not good, you might be fined, condemned to drink a quantity of it yourself and have the rest poured over your head. Woe to the clothmaker if the royal official, known as the "Aulnager," found his cloth of the wrong length or width. A butcher who sold meat which was "putrid and stinking and an abomination to mankind" would be sentenced to stand in the pillory and have his meat burnt under him. But if control was strict in those days, it was all done for a good purpose, for, as we have shown elsewhere, the main idea of trading in the Middle Ages was that there should be a fair and square deal between seller and purchaser.

HOW TRADE WAS ORGANISED: THE MERCHANT GILDS.

So, as trade widened and business transactions became more complicated, it became necessary to organise trade more and more by establishing a

" merchant gild," to which might belong merchants and traders of all kinds, and which regulated the trade of the town. It was an advantage to belong to this body, or kind of " trade-union " as we should call it now, for an outsider would have to pay a heavy fine or toll if he wished to trade in the town. Then, too, the gild acted as a kind of modern friendly society, and looked after its members when they were ill. Prices and the quality of articles were regulated by the gild, so that the public stood less chance of being cheated. In course of time, as more and new trades sprang up, the merchant gild found its hands too full, and each craft or trade wished and tried to regulate its own affairs.

THE CRAFT GILDS.

In this way we account for the origin of the " craft gilds." Then it became convenient for workers in the same trade to live in the same street or quarter of the city. Many of the streets of London and other towns have quaint old-fashioned names which recall the mediæval gilds. " Bridlesmith gate," where the makers of bits and bridles once dwelt; " Wheeler gate," the quarter of the wheelwrights; "Cordwainers lane," the shoemakers' quarter, and so on. These craft gilds tried, of course, to obtain royal sanction, and sometimes, as at Chester and York and other places, they provided those intensely popular and interesting pageants—the Miracle plays.

The increasing complications of trade naturally led men to take a special interest in one part of a business, or " to specialise," as we call it. We may guess that the wealthier craftsmen, who were probably richer than the others because they had more talent, found it more dignified to superintend business rather than to make the goods themselves

as before: the manufacture they would leave to others.

THE RISE OF THE GREAT COMPANIES.

In this way, perhaps, arose out of the craft gilds the great companies of merchants who attended only to the selling of the goods. Again, these companies sought royal charters, the first charter being granted to the Mercers' Company in 1364. Often these companies became very rich, and held much property, and their members would hold important positions, such as that of Lord Mayor. Much of their money was used for charitable purposes, and some of the great London companies founded well-known schools such as the Merchant Taylors, and Oundle (founded by the Grocers' Company).

The famous antiquary, John Stow, in his "Survey of London" (written in the 16th century), gives a list of sixty such companies. You should look up a list of them in Whitaker's Almanack, where they are called the "Livery companies of the City of London," the word "livery" being derived from the fact that at one time each company was supposed to have its own particular uniform or style of dress. The oldest of these companies, as we have said, is the Mercers. Next comes the Grocers, followed in order by the Drapers, Fishmongers, Goldsmiths, Skinners, Merchant Taylors, and so on. Notice the quaint old-fashioned names borne by some, such as:

The Armourers and Brasiers (workers in brass).
The Bowyers (makers of the famous long-bows).
The Fletchers (arrow makers), Cordwainers, Salters, and so on.

Often the coat of arms indicate the origin of the companies' wealth. Thus the Grocers' Company's arms has a camel laden with merchandise for its

crest, and on the shield six cloves; for spices were most important in those days.

Owing to various causes the gilds gradually passed into disuse, and only the London City Companies and a few others in provincial towns survive to throw a very interesting light on mediæval commerce.

SOMETHING TO DO.

Write, in your own words, a description of a mediæval fair.

Whence did the supplies of RAW wool come for the English mediæval wool trade? Where was it manufactured into (a) coarse cloths (b) finer goods? How would the finished goods reach the markets?

Imagine yourself a mediæval wool merchant, and write an account of some of your experiences in the woollen trade.

COMMERCE AND "COMMAND OF THE SEA."

The great Elizabethan seaman, Sir Walter Raleigh, in his writings tells us how the commerce of a country like ours must depend upon the command of the sea. His actual words are "whosoever commands the sea, commands the trade; whoever commands the trade, commands the riches of the world and consequently the world itself." What he means, of course, is that a country which carries on a large over-seas trade will see her commerce destroyed in time of war if she cannot protect by her navy her fleets of merchant ships. The poet Chaucer, in his famous poem, "The Canterbury Tales," puts into the mouth of his merchant the following words:

"He wolde (would) the sea were kept for anything
From Middleburgh to Orewelle,"

which means to say that the English merchant at that time desired especially that the sea should be guarded and made safe for the ships transporting his wool from Ipswich to Middleburgh (in Flanders), where he would be able to sell it to Flemish merchants. The truth of what Sir Walter Raleigh and Chaucer said has never been more clearly shown than in the last great European War. For if our navy had not had command of the sea, i.e., if it could not have protected our merchant ships bringing the necessary foodstuffs and other goods to our shores, the German plan of starving us out by sinking our merchant ships might and probably would have succeeded.

For a seafaring nation, then, supremacy on the sea is a vital necessity for the carrying on of commerce. And we can look at it in another way: the merchant service provides a school for the training of seamen and in time of war can supply the navy with recruits.

The history of the navy, viewed in this way, is, then, of great interest to us when we study the history of our commerce.

OUR EARLY NAVY.

Perhaps King Alfred was the first person to see clearly the importance of the navy. We are told that he built specially-designed ships which successfully contested the supremacy of the sea with the Danish rovers. Later tradition says that King Edgar patrolled these shores with a fleet estimated at between 3,000 and 4,000 ships. If only we had kept up our navy like this, who can say that William the Conqueror would have been able to land in our country? But, perhaps, it is as well that he did, for, as we shall see later, the Norman Conquest was of great service to our commerce.

We get an idea of the ships of those days from a study of the famous Bayeux tapestry, from seals, and from various manuscripts. Putting these together we picture a ship low in the water, light in build and long in shape, with one mast and one square sail, partly propelled by oars and steered by a paddle worked on the right side of the ship. It is from this latter detail that we get the name starboard (steer-board) for the right side of a ship as we look towards the bow. We do not know what was the exact carrying capacity of such ships. The White Ship is said to have had 50 oars, and to have carried 300-400 passengers when she foundered, but this may be an exaggeration, and probably the largest ships did not carry more than 40 or 50 people. In modern language such a ship would be said to be of about 30 tons, i.e., it would require that mass of water to float her. We must remember, too, that besides these warships there were the rounder, heavier and more clumsy cargo boats, more like a modern Thames barge than anything else.

HOW THE NAVY WAS GOT TOGETHER.

The English navy, then, in the Middle Ages, was composed of:

1. A contingent of ships from the Cinque Ports, i.e., Dover, Romney, Sandwich, Hastings and Hythe, to which were added later Winchelsea, Rye and other ports. These ports, in return for royal privileges, contracted to send so many ships and their crews to serve the King for a fortnight at the ports' expense. If the King wanted them for a longer period he had to pay them himself for overtime.

The history of these Cinque Ports is fascinating, and it is interesting to note that some of them have been silted up and are now not ports at all, but

situated a mile or two inland. You should consult your atlas and find out these facts for yourself.

2. Merchant ships temporarily fitted up as men-of-war by the addition of defensive wooden castles or structures erected at the bow and stern. The Crown had the right to compel any of these ships to serve, and the seafaring towns to provide ships and crews.

TYPES OF MEDIÆVAL VESSELS.

The points to notice about these vessels are: 1. The steering paddle. 2. The erections at the bow and stern which served as "fighting-tops." 3. There is only one mast and one sail. 4. The boat conveying the horses is copied from a figure in the Bayeux tapestry, and is an earlier type of vessel than the other two. It is longer, and not so deep. 5. The "cox" appears to be managing the sail as well as steering.

3. Foreign ships which the Crown had purchased or which had been captured in battle.

Be careful to note that such a navy was purely a temporary affair, and that when a campaign or war was over the crews returned to the ordinary occupations of life. For the "Royal" or standing navy we have to wait until the time of Henry VIII.

The Crusades must have introduced our seamen to the superior-built ships of the Italian republics, Venice and Genoa, and added to their nautical knowledge, so that in time we built bigger and more sea-

worthy ships. Indeed, we know of a 1,000-ton merchantman in the reign of Henry V. But in general our command of the sea was anything but lasting, and the North Sea and the English Channel (the Narrow Seas, as it is called) must have been a far from pleasant resort for our merchantmen. All through the Middle Ages the perils of merchants were very real.

THE DANGERS OF THE "NARROW SEAS."

The men of the Cinque Ports were often little better than pirates, and were as great a nuisance to their own countrymen as to the enemy. Complaints of their misdeeds and of their sacking and burning other seaports of England are numerous, and when they did not do it the French ships would come over and take a turn at raiding our coasts. Or if a French ship should be wrecked on our shores, as likely as not any of the crew that escaped to land would be put to the sword by the English population. So unsafe did the seas become that it was not unusual for the Crown to order a naval escort to protect the cargo boats, though this could not often be done as we were generally at war and could not spare the ships for such duty. Still we should remember this early use of the convoy system—a system which proved its value in the Great War.

In Richard I.'s reign we have the first great code of laws for regulating the merchant service, and very interesting reading it makes. We learn, for instance, that rascally pilots were in the habit of purposely running ships ashore at places where it was the custom for the Lord of the place, with whom these pilots of course had an understanding, to receive a large share of the spoils of any wrecks. If things were bad in the Channel, they were no better in the North Sea,

for the ships of the Hansa towns constantly attacked our merchant ships, killed their crews and carried off their merchandise.

PIRACY ON THE HIGH SEAS.

In the lawless times which succeeded the reign of Edward III. our merchants fared especially ill. As late as 1436 we find Danish ships seizing, on the High Seas, £5,000 worth of goods belonging to Hull merchants and £20,000 worth belonging to other English owners.

In an agreement between Henry IV. and the merchants of the Hansa towns, the English King instances no less than 26 complaints of piracy on the part of German ships. A characteristic item complains that "in the year of Our Lord 1393 certain malefactors of Wismer and Rostock and other their complices of the Hansa, wickedly and unjustly took from one Richard Abell, of London, woollen cloth, green cloth, meale and fishes to the value of £133 6s." Or take another case: "In the year of Our Lord 1396 one John Derlowe, Hans van Gelder, and other their complices of the Hansa, villainously and unjustly tooke a shippe of William Terry of Hul called the Cogge with thirty woollen broadcloathes and one thousand narrow clothes to the value of £200."

REPRISALS.

In such cases if you were a merchant you might appeal to the King, who might demand satisfaction for your losses, and if this were not forthcoming might give you a document granting the royal permission for you to seize, wherever you could, enemies' goods to the value of your own losses. Such documents were known as "letters of marque," and such crude

methods of avenging yourself on your enemy we call "taking reprisals."

But we must not imagine that the fault was all on one side. As far as we can see, our sailors were just as bad as the foreigners, and it was certainly a case of "six of one and half-a-dozen of the other."

A MEDIÆVAL POEM ON SEA-POWER AND COMMERCE.

It was such circumstances as we have told of above that caused some writer about 1436 to write a most interesting poem called "The Libel of English Polity," dealing with our navy and commerce. In it he complains that since the days of Edward III. we have lost our supremacy of the sea, and in consequence are fast losing our commerce. He says it is time for the Government to make a great effort to establish our naval superiority once more, and one of the ways to do it, he says, is for the King to keep the two towns of Dover and Calais as if they were his two eyes.

The poem gives us a capital account of the foreign trade of the Middle Ages, and we shall refer to this later on. It is interesting to find an Englishman so many years ago with such a clear idea about the close connection between the navy and commerce, for it is this point especially which we have been trying to make clear to you. You ought also to have no doubts at all that the merchants and sailors of the Middle Ages had unbounded pluck and perseverance in pursuing their arduous calling in such times.

SOMETHING TO MAKE.

Make models of the mediæval ships shown in the illustration. Read the description of a "merchant" in the prologue to the "Canterbury Tales."

FOREIGN MERCHANTS IN ENGLAND.

As we have already noted, the Norman Conquest must have brought over here many foreign merchants and craftsmen, and these greatly increased in numbers during the 13th and 14th centuries. The Magna Carta gave them free rights of trading, and under succeeding Kings they obtained many charters confirming and extending their privileges. The Crown found them useful because it could borrow money from them, and wise kings like Edward I. and Edward III. probably saw the advantages to the country of the presence of business-like merchants and skilled workmen. But the people of England thought otherwise, and looked upon the aliens with suspicion and dislike. In Edward I.'s reign a very important Act was passed which set forth very clearly the conditions under which aliens were allowed to trade over here. The Act mentions particularly merchants of Germany, France, Spain, Portugal, Lombardy, Florence and Flanders—and goes on to say that the foreigners can engage freely in the "wholesale" trade provided they pay the usual dues and customs. And if disputes arise, and the case comes before the law-courts, then the jury if possible must be composed of foreign merchants. Such disputes must be settled by the special kind of law for such cases, called "law-merchant." Another clause of the Statute says that in London a "faithful and discreet" man is appointed to look after the interests of alien merchants. This is interesting, because our "consular" service of the present day is worked on the same principle.

Nevertheless, despite the royal protection, foreign craftsmen often suffered inconvenience and annoyance at the hands of the English populace, and saw

their goods stolen and their weaving machinery destroyed.

Jews also had a hard time. They could live only in certain specified towns, and if they wished to remove from any town a special licence from the Crown had to be obtained. Then the Crown might order them to remove whether they wanted to do so or not. For instance, in 1275 the Jews in Gloucester were ordered to remove to Bristol, and those in Cambridge to move to Norwich. Then, too, a special Jews' badge had to be worn, and infringement of these laws would be punished with confiscation of goods or even expulsion from the country.

Edward I., partly because of the Jews' unpopularity, partly because he could borrow money equally well from the Italian banker-merchants, finally expelled the Jews from this country, to which they did not return till the time of Oliver Cromwell.

Many of the foreign merchants had business houses, as we should call them—" factories " as they were called then—in our chief towns. The Hanseatic League had establishments in Boston, Norwich and other cities. In London their " factory " went by the name of the " steelyard," so-called probably because of the public weighing machine which stood there.

THE IDEA OF THE STAPLE.

The export trade was carefully regulated. As wool was for many years our principal article of export, and as the Crown obtained much money from dues levied on it, it was decreed that wool could be sold and exported only at special places called " staple " towns. Other commodities were, of course, treated in a like manner. Calais was for long the chief wool staple town. Then the staple was shifted

to Bruges in Flanders, and at another time to our own towns, such as Bristol, Norwich, Carmarthen, &c. You see, the idea was that in this way it would be easy to organise the sales of wool, &c., and to collect the necessary customs, as all the business would be in one place. There was another point of view: the fixing of the staple at a town would mean increased business and much money for the town, so the grant of a staple could be used as a bribe wherewith to persuade, say, Flanders into an alliance with us. In this way commerce became a matter of politics.

STAPLE TOWNS IN THE MIDDLE AGES.

FAMOUS MEDIÆVAL MERCHANTS.

This system had another important political result, in that it led to the increasing importance and influence of the merchants as a class. And true patriots and benefactors to king and country did they often appear. Many families became widely known for their wealth, business-like methods and liberality. There were the De La Poles of Hull, who amassed their money in the North Sea trade and from time to time were Members of Parliament for Hull, and advanced large sums of money to the extravagant and not always grateful Edward III. In the next century the Canynge family of Bristol built up a large fortune from the Baltic trade. One of them is said to have had a considerable fleet of merchant ships, two of which—the "Mary and John" and the "Mary Redcliff"—are recorded as being exceptionally large vessels. William Canynge was a very interesting person. He helped the Yorkists, entertained Edward IV., built the fine church of St. Mary Redcliff in Bristol, then took Holy Orders and retired to the Priory at Westbury (near Bristol), where he died in 1474. Then we have the famous Richard Whittington, a mercer, who was three times Lord Mayor of London, lent large sums of money to the Crown, was a liberal benefactor to the poor, and left a legacy to rebuild the prison of Newgate. William Walworth, fishmonger, became Lord Mayor of London, and was knighted for his services in stamping out the 1381 Peasants' Revolt—no doubt you have read of how he slew Wat Tyler. John Stow, in his "Survey of London," has a chapter devoted to the doings of great London merchants and others, of whom none is more interesting than Sir John Philpot, Mayor of London and one of the Grocers' Company, of whom we read that "he hired with his own money

one thousand soldiers and defended the realm from incursions of the enemy, so that in time his hired men took John Mercer, a sea rover, ... and 15 Spanish ships laden with great riches." Moreover, in the year 1380, when our English expedition, which included the two famous Cheshire soldiers, Sir Hugh Calveley and Robert Knolles, sailed for France, "the said John Philpot hired ships for them of his own charges, and released the armour which the soldiers had pawned for their battles, more than 1,000 in number." It is quite evident that merchants in those days were often extraordinarily rich, and such buildings as Hugh Clopton's bridge at Stratford-on-Avon and that charming old-world 13th century fortified manor house, Stokesay Castle, where lived a merchant, one Lawrence de Ludlow, still survive in excellent preservation to witness to the wealth and taste of the mediæval merchant.

Sir Richard Whittington.

THE TRADE OF WESTERN EUROPE IN THE MIDDLE AGES.

(1) THE MEDITERRANEAN.

We are now in a position to take a general survey of the commerce of Europe in the Middle Ages. For our purposes we may say that the commercial life of western Europe begins with the rise of the Italian republics about the 9th century. Let us deal, therefore, first with the Mediterranean area.

An extensive trade was carried on by the Italian cities or republics of Amalfi, Pisa, Genoa and Venice, while Florence was the centre of banking and what we call "the fine arts." The Crusades, as we have seen, further encouraged commerce, so that Pisa, for example, traded with southern France, Spain and Sicily; Genoa with Spain, Portugal, Flanders and the Black Sea, the trade of which she controlled for nearly two centuries. Venice had factories in all the harbours of Palestine, traded largely with the Crusading Kingdoms while they lasted, opened up trade with the Mongols and with the heathen States of North Africa (this despite the Church's prohibition), and twice yearly despatched to the Levant passenger services for pilgrimages and sight-seeing, in this way anticipating our modern "Cook's tours." By treaties with Germany she opened up overland routes through the Alps. Her merchants did business in Tana and Trebizond (on the Black Sea), in Mosul, Bagdad and Damascus, and even penetrated to China. In the later Middle Ages, the annual visit of the Venetian fleet—the "Flanders galleys," as it was called—to our shores was an event of national importance. Part of this fleet sailed to Flanders direct, and part put in at our ports of Sandwich, Southampton and London, where the Venetians exchanged their luxury articles for our wool and cloth.

But these Italian republics were jealous of each other and were always quarrelling, until finally Venice, by reason of her natural advantages of position, outstripped the other cities and became Mistress of the Mediterranean. Gradually, as our own manufactories grew in importance and bulk, and our merchants became more jealous of the foreign merchants in England, Venetian trade declined in importance, until the discovery of the new route to India via the Cape dealt the death blow to her supremacy. After 1532 we hear no more of the "Flanders galleys."

(2) THE BALTIC.

It was different with the merchant cities of North Germany, to which we have already referred. The Hanseatic League was an association of German towns formed in the 13th century for the mutual protection of their commerce. Eventually the League became so powerful that it controlled the whole of the Baltic and North Sea trade. Ninety towns belonged to it. Its interests extended up the Rhine to Cologne, north as far as Bergen in Norway, westwards to London, and eastwards to Novgorod in Russia. In each of these towns the League had factories. The "steelyard," to which we have already drawn attention, was the centre of a regular German colony, where the aliens enjoyed for many years extensive privileges such as permission to trade in some articles retail, and reduced customs duties. The colony was governed by its own Council, presided over by an alderman, who was in later times nominated by the King of England. Merchants of the Hansa also settled in other towns, such as Lynn and Boston (Lincolnshire). They brought into our country typical products of northern Europe—all kinds of naval material, such as timber, pitch and tar, hemp for ropes, and in addition corn and furs.

PRINCIPAL TOWNS OF THE HANSEATIC LEAGUE.

But the Hansa also declined, for the same reasons as did Venice, and the Steelyard was finally suppressed in Elizabeth's reign. None the less, the organisation and combination of the cities enabled them to retain their commerce long after the Italian republics had ceased to be of importance, and to-day Hamburg is one of the greatest ports of the world, and Lubeck and Bremen and other Hansa towns still thrive commercially.

The following list gives the commodities of the principal countries of Europe as mentioned in the "Libel of English Polity." You will see that many of the Mediterranean exports were as important in the Middle Ages as they are now. You should add to the list of goods coming into the Mediterranean, and being largely re-exported, rhubarb and musk from Tibet; flax from Egypt; corn from the Black Sea region; gums, dates and ivory from North Africa. Lastly, remember the most important import trade of salt fish to the Roman Catholic countries of southern Europe, and the timber import of Egypt—for Egypt has never had a timber supply of its own.

Place.	Articles of Commerce.
Spain	Mediterranean fruits, wine, olive oil, wax, iron, quicksilver.
Portugal	Wine, salt, hides, leather, Mediterranean fruits.
Flanders	Fine cloth (from Ypres especially), madder, linen.
Brittany	Salt, wine, canvas (sent to Flanders).
Prussia and the Hansa towns	Bacon and beer to Flanders ("for the Flemings in common love bacon and beer best"), copper, pitch, tar, bowstaves, steel, iron.
Genoa	Cloth of gold, silk, pepper, cotton.

Venice and Genoa	Luxury articles and sweet wines, apes, senna, rhubarb.
Holland	Madder and woad (for dyeing), salt fish, onions.
Iceland	Stock fish (trade especially with Bristol and Scarborough).

SOMETHING TO MAKE.

Draw a map illustrating the above facts. Insert in it the principal ports of export and draw arrows indicating the direction in which the exports would be sent.

Social life in the disturbed times of the Wars of the Roses is vividly portrayed in the "Paston Letters." There is a short but good selection from these in modernised English, published by the Clarendon Press. Your teacher may read you extracts which will show for instance, the necessary household expenses, the necessity for self-defence in those days, the library of a typical gentleman of the time.

PART II.

THE "ATLANTIC" PERIOD OF COMMERCE.

ENGLAND SECURES A NEW FORM OF GOVERNMENT.

The close of the Middle Ages in England saw the passing away of the old feudal system of government, and in its place the establishment of a people united and organised for one purpose—the welfare and progress of their country as a whole. In a word, England became a nation. So did other peoples in western Europe. How? The answer is the same in every case: By the establishing of a strong central government, in place of the ruinous methods which were typified in England by the Wars of the Roses. No doubt our Tudor monarchs were despotic at times; no doubt many of their actions and methods are hard to justify; but at any rate by the end of their dynasty they left England strong, wealthy and well governed.

THE NEW COMMERCIAL POLICY.

And in none of the spheres of national life did their principles show more clearly than in their commercial policy, which was run on the lines of what was called "the mercantile system," the general aim of which was to make this country a strong and self-supporting nation. For good or ill, this policy endured for over two centuries, in fact down to the eve of the Industrial Revolution in the 18th century. So, as we shall be studying it in the following pages, we must try to realise the principles on which it was based and the means by which it was carried out.

THE MEANING OF THE MERCANTILE SYSTEM.

The arguments for it ran something as follows:— The country must recover its strength and position among the European Powers; it must be made wealthier, more self-supporting. There is no surer way of accomplishing these ends than by *increasing trade*. We must therefore sell more and buy less. The State must see to it that our merchants do not suffer from competition abroad and difficulties at home. In a word, *trade must be "protected." We must become more self-supporting, i.e., we must develop our own resources.* More corn, for instance, must be grown and must not be exported except in very favourable years; the wool trade must be encouraged, woollen manufactures exported more, and so on.

This increase in trade will mean more goods to be carried, more commerce to be protected. Therefore our mercantile marine must be increased, more ships must be built and a regular navy established. We must, in fact, *regain the command of the sea and so establish our carrying trade.*

Such, in brief, were the principles on which the mercantile system was based. We shall find, then, that the outstanding features in the history of our commerce to, say, 1760 are: *State control of trade by a policy of "protection": The establishing of our sea supremacy*, and as a result of this *the foundation of our colonial system.*

These are the three main factors you must constantly bear in mind if you wish to follow the history of our commerce during the following two and a half centuries.

Now let us examine each of these in turn.

First, remember that during the whole of this time we shall find Great Britain still continuing to be dependent for her wealth mainly on her pastoral and agricultural industries. True, we had one very important manufacture, viz., woollen goods, and, as we shall see later, several lesser but important industries. Nevertheless, our other exports were mainly agricultural and pastoral products, and it is by exports that a nation pays its way.

THE OPENING OF NEW MARKETS.

As we have already seen, we had for centuries been noted for our exports of raw wool. Now under the mercantile system it was thought more important to turn our attention to exporting the finished product, *i.e.*, the manufactured woollen, silk and linen goods. To do this, of course, new markets had to be found, which meant that we had to take our full share in the new enterprises which had sprung up as a result of the discovery of the New World. And our merchants certainly rose to the occasion. One of the

Sir Thomas Gresham.

most famous of them was Sir Thomas Gresham, a mercer who, besides being a great financier, founded in 1566 the Royal Exchange. This building served as a meeting place and central trade resort for merchants. It was unfortunately burnt down in the Great Fire of 1666, but was subsequently re-built. The illustration in the text shows it as it existed in 1760.

The Royal Exchange, 1760.

MONOPOLIES.

The merchants either traded on their own or formed themselves into trading companies, which often contrived to get the trade of a particular area or article into their hands so completely that they could establish a monopoly, or "profiteer," as we now say. So many were the complaints against this kind of thing that a law had to be passed in Charles I.'s reign abolishing such royal grants of monopolies.

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PROTECTION AGAINST COMPETITION.

In general, then, the idea was to "protect" the merchant and manufacturer against what was considered unfair competition, either at home or from foreign nations (such as the Dutch and Spanish), or even from the Colonies.

THE NAVIGATION ACTS.

So Parliament took the matter in hand and passed a whole series of laws, which were added to from time to time, and which we may group together under the name of the "Navigation Acts." We shall hear more of these later on. Meanwhile let us note that the famous Act of 1651, which was aimed at the carrying trade of the Dutch, is a very fair example of this kind of legislation.

AN EXAMPLE OF "PROTECTION."

Perhaps the best illustration of this system is to be found in Strafford's commercial policy in Ireland. Let us hear what Strafford has to say about it—he is writing to King Charles and giving him an account of the Irish trade: "That there was little or no manufacture amongst them, but some small beginnings towards a clothing trade, which I had and so should still discourage all I could. . . . in regard it would trench not only upon the clothing of England being our staple commodity so as if they would manufacture their own wools which grew to very great quantities, we should not only lose the profit we made now by indraping their wools, but his Majesty lose extremely by his customs, and in conclusion it might be feared *that they would beat us out of the trade itself by underselling us.*" But the

Irish shall be compensated thus: "Yet have I endeavoured another way to set them on work and that is by bringing in the making and trade of linen cloth." And so he sends to Holland for workers to teach the Irish the flax trade and purchases £1,000 worth of seed. And the result has been the Belfast linen industry of to-day.

You see from this extract not only State interference at its best and worst, but the curious way in which Ireland was regarded as a foreign nation. Scotland and the Colonies were treated in the same way. It simply did not occur to statesmen at that time or for many years afterwards that prosperity in other portions of the British dominions meant gain to the mother country, in that there would be more money with which the colonies could purchase more English exports. Under the Commonwealth rule "protection" reached its limit. Practically every trade was then state-controlled, much in the same way as it was during the Great War (1914-1918). Under Cromwell's rule, for instance, the price of bread was not what the bakers liked to make it, but was fixed by law according to the price of corn; the slaughtering of cattle was strictly regulated; no farmer could keep more than 2,000 sheep, because sheep-rearing provided less labour than agriculture, and so forth.

Our experience of the last six years has made us more or less used to state control of trade, but there are many people who think that individual control is preferable because it gives more scope for enterprise. Be this as it may, at any rate under the Commonwealth rule, state control seems to have been extraordinarily efficient. It certainly justified itself until new conditions of trade and commerce arose which made it necessary to adopt a freer and wider policy.

SOMETHING TO DO.

Describe simply, in your own words, the working of the " mercantile system." What is meant by " monopolies " in Commerce? What are the evils of them?

Now let us examine the second point of note in the commercial development of the period. It is, you will remember, the establishing of our sea-power.

THE " ATLANTIC " PERIOD OF COMMERCE.

First note that the end of the Middle Ages is the end also of the " Mediterranean " period of commerce and the beginning of what we may call the " Atlantic " period. The crossing of the Atlantic by Columbus and the Cabots, the rounding of the world by Magellan and Drake, the discovery by Vasco-di-Gama of the Cape route to India and the voyages of discovery in search of the N.E. and N.W. passages to India opened up new trade routes and possibilities of new markets, and broke down once and for all the European trading monopolies established by Venice in the Mediterranean and by the Hanseatic League in the Baltic. Commerce, you see, was shifting from land-locked seas to the open ocean. And as we have seen, all this brought in fresh competitors with whom we had to fight out the issue of the command of the sea. Observe that " sea " now means the ocean routes and not simply the " narrow seas," as it did in Edward III.'s days.

THE BEGINNING OF OUR SEA SUPREMACY—THE " TUDOR " PERIOD.

Very fitted for the struggle we were, both by national character and training, and by geographical position, for the British Isles lie in the centre of the land hemisphere and can trade equally well in all

directions. The Tudors were quick to grasp the situation and to make the mercantile system help us regain our naval supremacy.

Our fisheries had always been important and, you will recollect, had been in the Middle Ages a nursery for the training of sailors. So the Tudor laws said fishing must be encouraged: people must eat more fish, so Wednesday was set apart as a day on which everyone must eat fish; and fish could be exported free of duty.

We must have more ships. Very well, let "bounties" (i.e., money prizes, sometimes 5s. a ton) be paid to everyone building ships over 100 tons burden. Naturally this encouraged the building of bigger and more seaworthy ships. This was fortunate, because there was a great demand for these on the part of the great trading companies. Indeed, the East India Company got constructed a ship of no less than 1,100 tons and named it "The Trade's Increase."

SOMETHING TO DO.

Find out from your history books what an Elizabethan ship looked like. Make a drawing of one. Compare it with your drawings of the mediæval vessels.

Many of the old naval and mercantile marine lists remain, from which we gather that in 1582 the mercantile marine mustered some 1,300 ships, and seven years later this number had been increased to over 7,000. In Henry VIII.'s reign, Trinity House and a Navy Board were instituted, dockyards were built and a permanent "Royal" Navy established, so that by the time of the Restoration there was no need any longer to employ the services of hired merchantmen as fighting ships.

GRADUAL ESTABLISHING OF OUR SEA SUPREMACY.

All this was excellent as long as Tudor rule lasted, but under the feeble rule of the first two Stuart Kings and owing to the Civil Wars our carrying trade succumbed to Dutch competition, and Turkish and Dunkirk pirates swarmed round our coasts and effectually strangled our export trade. Thanks, how-

ADMIRALTY, 1760.

The building shows early 18th century architecture with its plain, severe style of exterior and the regularity of the placing of the windows. The idea of a Navy Board dates from Henry VIII.'s reign, but up to 1708 the administration of the Navy was in the hands of the Lord High Admiral. From that date the administration has been in the hands of the "Lords Commissioners of the Admiralty."

ever, to Cromwell's energetic rule, things gradually righted themselves. The Navy was reorganised; the convoy system established, our merchantmen were protected, and the pirates were driven off. The Navigation Act of 1651, and subsequent Acts of the

same kind in Charles II.'s reign, coupled with the seamanship of Blake and afterwards of Monk, and the hostility of Louis XIV., finally ruined the Dutch as the premier commercial carrier and our most serious rival. As we have noted before, Spain and France gave us endless trouble, but in the end, thanks to such statesmen as Walpole, whose peace policy enabled us to accumulate the wealth necessary to finance the later wars, and Lord Chatham, who had a genius for carrying through big statesmanlike schemes, thanks also to naval administrators like Lord Anson and St. Vincent, and a host of famous seamen from Hawke and Saunders to Howe and Nelson, we emerged from the long struggle with our command of the sea assured, with our trade increased and with a Colonial Empire.

And so we reach our third part—the colonies.

WHY WE FOUNDED COLONIES.

How was it we came to found colonies? Partly owing to those causes which we have already enumerated when we discussed our sea power, partly owing to civil and religious persecution under the Stuarts which drove many people to take refuge in distant lands, and partly on account of the commercial advantages which we saw Spain and Portugal and the Dutch gained from their colonies. Some of the arguments for founding "plantations," as colonies were called in the olden days, are very well summed up in a document written in 1583, giving an account of "The discoveries and possessions taken in the right of the Crown of England of the Newfound Lands by Sir Humphrey Gilbert." Thus:

> New harbours will be found and so fishing will go on all the year round instead of for two months only as formerly.

In this way our mercantile marine will increase.

Thirdly, colonisation will give employment at home to women and children, who can manufacture all kinds of trifles to be bartered with the savages in the newly-found colonies.

Fourthly, people who emigrate from here will find fresh employment in agriculture and mining in the new country.

Lastly, we shall be able to accomplish missionary work among the savages.

But, speaking generally, we shall not be wrong if we say that the prospect of increased commercial gains was the principal reason for colonisation.

EXPLORATION AND COMMERCE.

English early exploration was largely undertaken, then, for purposes of commerce. The main idea was to find new trade routes, especially to the spice islands of the Far East, which should be entirely in the hands of English traders. For, you will remember, Portugal and Spain had claimed the new trade routes across the Atlantic as their own preserves and looked with jealousy on any other nation attempting to use them. It is for this reason that we find so many attempts to open up the N.E. and N.W. passages. Though these attempts were unsuccessful, they have added to our history many heroic exploits and illustrious names, some of which are commemorated in the place-names on the world's map. Hudson Bay, James Bay, Davis Straits and so forth are reminders of our intrepid early explorers.

THE TRADING COMPANIES AND COLONIAL EXPANSION.

It was this spirit of enterprise and freedom which led to individual explorations and discoveries and to the formation of the new Trading Companies to which we have already alluded. And it is to these that we owe the foundation of our colonies. For you must remember that at first the English Government did not realise fully the value of what our explorers and merchants were accomplishing, and in consequence gave them scanty support. Of course "charters" had to be obtained from the Crown and in some cases the Crown appointed colonial governors, but, these things apart, the administration of the newly-acquired lands was largely in the hands of the Trading Companies.

We cannot here trace the history of our colonies, but at least you ought to know that in 1607 the London Company sent out an expedition, under Captain John Smith, which established our first colony (Virginia) on the mainland of North America; that 300 years ago (i.e., in 1620) the "Mayflower" sailed and New England was settled by the "Pilgrim Fathers"; that in 1600 the East India Company was founded.

THE EAST INDIA COMPANY.

This most important Company was a joint-stock one and was formed for the purpose of trading with the Spice Islands. Owing, however, to the hostility of the Dutch traders, who were already established there, the Company transferred its interests to the mainland of India. In 1612 the first English trading station, or "factory," was established at Surat. In

1639 another was founded at Madras; in 1696 Calcutta was established, and 1668 saw Charles II. hand over as a present to the East India Company the important port of Bombay.

Naturally the Company's monopoly attracted much jealousy, and a rival East India Company was formed. In 1708, however, the old and the new companies amalgamated. From this date the history of the East India Company becomes the history of India. How we won our Indian Empire and how we governed it does not concern us here. Suffice it to say that in 1858 the Crown took over the government of India and the rule of the East India Company came to an end.

East India House, 1760.

The commercial policy of the Company led them to encourage Indian manufactures such as silk and cotton piece goods, silk and cotton yarn, but the English merchants complained of such imports because they were supposed to compete with home

manufactures. And so, right up to the middle of the nineteenth century, our imports from India were mainly raw native products or such goods (e.g., muslin and calico) as we could not manufacture ourselves.

The headquarters of the Company were in London. In 1726 new offices were built in Leadenhall Street (see p. 47); in addition there were extensive warehouses in the Steelyard, Seething Lane and Fenchurch Street; and the cellars under the Royal Exchange were used by the Company for the storage of that most important article—pepper.

Whether the administration of the East India Company was, on the whole, wise and efficient need not be discussed here. The point we wish to emphasize is that it was "the Company of Merchants trading to the East Indies" which made our Indian Empire possible.

SOME WORKS DEALING WITH ADVENTURE, EXPLORATION, AND EARLY COLONISATION.

Kipling's "The Explorer."

Andrew Marvell's "Song of the Emigrants in Bermuda" (printed in "the Golden Treasury").

Macaulay's ballad on "The Armada."

Newbolt's poem on the legend of "Drake's Drum."

Longfellow's "Courtship of Miles Standish," "Evangeline."

The contemporary accounts of the Elizabethan adventurers can be read in "Hakluyts' Voyages" (reprinted in "Everyman" series).

See also selections from Sir Walter Raleigh's writings (Oxford Press).

THE COLONIES UNDER THE MERCANTILE SYSTEM.

As we might expect, the colonies were brought under the mercantile system; and this meant that they were at first regarded as acquisitions of value only in so far as they brought gain and wealth to the mother country. Thus were passed the Navigation Acts which enacted that certain colonial products could be exported only to England, others to Europe south of Cape Finisterre, while many other articles could not be exported at all. Colonial products at this time would mean raw products mainly, for it was not until the latter part of the nineteenth century that Canada and India became manufacturing countries. Australia, South Africa and New Zealand were not yet a part of the Empire, and by the time our original colonies in America were able to manufacture for export they had ceased to be a part of the Empire, though it is quite clear that there were, even as early as during the first half of the eighteenth century, important manufactures for local use of such things as textiles and boots and shoes. Nevertheless, almost from the very beginning the mercantile policy of English statesmen pressed hardly on our American possessions. For instance, a law of William III.'s reign said that no woollen manufactures from the colonies were to be "loaden on board any ship or vessel in any place or parts within any of the said English plantations upon any pretence whatsoever," and no such goods should be exported to any other of the English plantations. Later a whole series of similar Acts prohibited the migration from here to the colonies of any man skilled in the knowledge of cotton, woollen, linen and silk manufactures, and prohibited also the exporting to the colonies of any textile machinery. Moreover, any colonist convicted

of enticing away from England any workmen or manufacturer was liable to a fine—sometimes as much as £500—and a year's imprisonment.

CRITICISM AND RESULT OF THIS POLICY.

This is but a sample of our dealings with our colonists, and it is hardly surprising that they complained so bitterly of the Navigation Acts. In justice it may be said that such Acts often remained a dead letter owing to the smuggling which we allowed to go on, that some of the chief products were not on the restricted export list and that the colonies may have exaggerated the evils of these Acts.

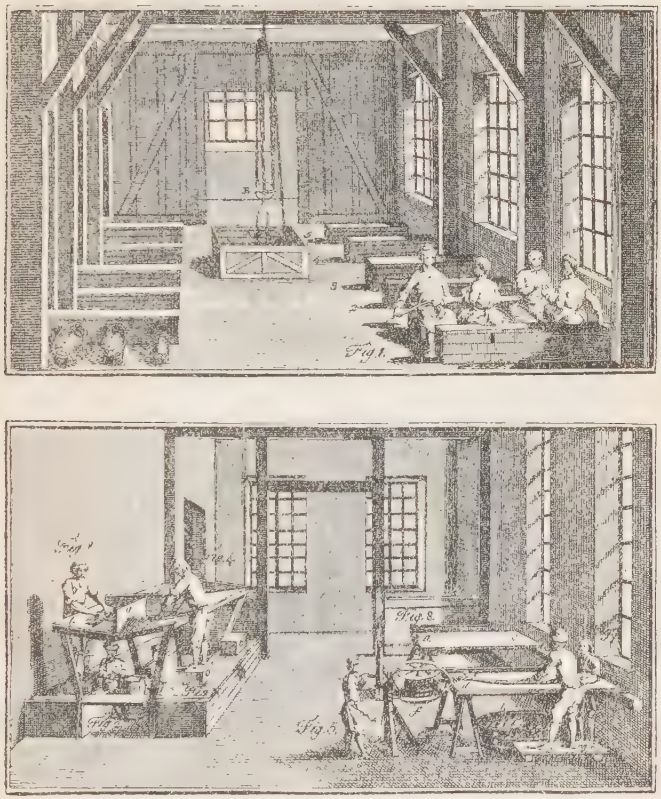
But, allowing for all this, it is clear that such a policy was bad because it tried to force trade into restrictive channels and to keep the colonies "tied to their mother's apron strings," as the saying is.

The consequent loss of our American colonies, the writings of Adam Smith and the Industrial Revolution led, as we shall see later, to the abolition of all the machinery of the old mercantile system.

NATURE OF OUR TRADE WITH THE COLONIES.

And here let us examine the nature of the trade within our Empire during this period, i.e., during the 17th and 18th centuries: India could furnish us with spices, and especially the finer cotton goods such as calico and muslins, and, towards the close of the 18th century, with tea. Rice came from Mangalor, indigo from Agra, pepper from Malabar. From Canada, i.e., the Hudson Bay territories, for the rest of the country was not yet developed, we procured furs.

The products from our thirteen American colonies were such as we should expect. Virginia and Maryland were noted for tobacco, Georgia and South



TOBACCO MANUFACTURE, XVIIITH CENTURY.

The upper figure shows boys separating the fine and tender parts of the leaves from the ribs. The former are put into the baskets in front of them, the latter are thrown behind the benches on which the boys are sitting. The lower figure shows the making of what was called "pig-tail" tobacco.

Carolina for rice and indigo, Newfoundland for fish, North Carolina sent us all kinds of naval stores, the West Indies sent sugar, rum and molasses.

Cotton, of course, became the staple produce only in the next century.

In return we exported woollen goods of all kinds, and by 1760 it is reckoned we were supplying practically all the colonists' wants, especially as regards household necessities such as furniture, glass, lead, locks, &c.

SOMETHING TO DO.

The following are some famous names in the history of British exploration and colonization. Find out all you can about them, and write down the information in your note books.

Sir Francis Drake, Sir Walter Raleigh, Sir Humphrey Gilbert, John Cabot, Martin Frobisher, John Davis, Henry Hudson, William Dampier, Captain John Smith, "The Mayflower," William Penn, Capt. Cook.

Which of these names occur on a map of the world? Where?

Imagine yourself a merchant in one of the American colonies in 1700. Write a letter to a friend in England, giving your opinion of the Navigation Acts.

The table below shows our woollen exports to the colonies in certain years.

(1) Draw a graph to represent these facts.

(2) Try to explain the great decrease of our exports in 1775.

VALUE OF WOOLLEN GOODS EXPORTED FROM ENGLAND TO THE COLONIES.

Colonies.	1772	1773	1774	1775
	£	£	£	£
New England.....	284,553	...147,717	...168,815	... 8,382
New York.....	128,879	... 76,498	...129,547	 345
Pennsylvania.....	216,055	...135,119	...217,205	... 10
Maryland and Virginia	185,437	... 99,308	...133,912	... 5
North Carolina and South Carolina	84,226	... 73,403	... 91,361	... 1,106
Georgia	26,492	... 16,982	... 14,627	...39,719

SOME EARLY INDUSTRIES.

You will remember that we said that during the period of the mercantile system of commerce we developed certain minor but very important industries. It will be as well to consider these now, as without a knowledge of their early growth we shall not be in a position to understand the wonderful changes brought about by the Industrial Revolution which we shall have to study presently. The industries we refer to are those of coal and iron in particular. And we can usefully supplement our study of them by considering also the state of our more important textile industries in 1760.

Suppose, then, we begin with coal.

THE EARLY COAL INDUSTRY.

The mining of this mineral seems to have been general in Great Britain in the 14th and 15th centuries. The Whitehaven (Cumberland) and Newcastle mines seem to have been the most important, but there were many others for local use. Writing in 1665 a writer says that "There is at least within 10

miles of the Castle of Dudley 12 or 14 cole-works, some in Worcester and some of them in Staffordshire, each of which works get two thousand tun of cole yearly, some get three, four or five thousand tun of coles yearly: and the uppermost or top measures of coles are ten, eleven and some twelve yards thick."

DESCRIPTION OF AN EARLY 17TH CENTURY MINE.

Another writer of an earlier date (1603) gives us a capital description of coal mining in Pembrokeshire. This is what he says about it: "They (the miners) nowe most commonlie sinke down right 12, 16 or 20 fathoms before they come to the cole. When they finde it they worke sondrie holes one for every digger, each man working by candle light and sitting while he worketh, then have they bearers which are boys that beare the coles in fit basketts on their backes goinge alwaies stoopinge by reason of the lowness of the pitt. Eache bearer carieth this baskett six fathome where upon a benche of stone he layeth it, where meeteth him another boy with an emptie baskett and taketh that which is full of coles and carieth it as farre, where another meeteth him, and so till they come under the door where it is lifted upp. In one pitt there will be sixteene persons, whereof there will be three pickaxes digging, seven bearers, one filler, foure winders, two ridlers: these persons will land about eightie or one hundred barells of cole a day. All times of the yeare is indifferent for workinge, but the hot weather is worst by reason of sudden dampes which happen, which often tymes causeth the workmen to sounde (faint) and will not suffer the candles to burn. They worke from sixe a clocke to sixe a clocke and rest an hour at noon and eat their allowance as they terme it, which is three

halfpence in bread to every man and 4d. in drink among a dozen. All their worke is by candell light throweout the yeare. . . . The dangers in digging these coles is the fallinge of the earth an quellinge (killing) of the poor people or stopping of the way forthe and soe die by famyne, or ells the sodayne irruption of standinge waters in olde workes. The workmen of this black labourc observe all abolished holiedaies (holidays) and cannot be weaned from that follie."

From this you can see that coal mining was a very slow and tedious job. The hours were very long, there was no machinery, and transport too must have been very difficult, so that it is really rather surprising to find how much coal was produced.

SOMETHING TO DO.

Write out the above account in your own words.

THE EARLY COAL EXPORT TRADE.

A certain Dud Dudley, whom we shall have to mention again for his attempts at iron smelting, in 1665 says "there goeth out of England, Scotland and Wales many thousand tons annually of pit cole and sea coles to furnish France and also the smiths thereof, Spaine, Portugal and Flanders; the Low Countries and the smiths thereof, besides the Hollanders, carries great quantities of our coles unto foreigne parts, without which those countries could not subsist." Clearly there was a considerable export trade. You should notice how coal in those days is always classed either as pit coal or sea-coal. Of course all the coal came from the pits, but "sea-coal" is coal transported by sea, e.g., London used sea-coal because it obtained its supplies by sea from Newcastle, just as it does to-day in fact.

THE TRADE IN 1760.

By 1760 the coal industry had further expanded. The Newcastle and Cumberland mines supplied all the South of England and Ireland with large quantities of coal, and Newcastle exported largely to France and Holland. There were generally over 1,500 ships annually employed in the coal trade between Newcastle and London, and there were many thousand colliers employed in the mines and also a great number of people in the land transport of it. Coal was sold by the "chaldron," which contained 36 bushels. In 1536 Newcastle coals were 2s. 2d. locally and in London 4s. the chaldron. By 1760 the price in London had risen to over 30s. a chaldron.

THE EARLY IRON INDUSTRY—DUDLEY'S EXPERIMENTS.

The kindred industry of iron was in very much the same condition as that of coal. No one had yet discovered how to smelt successfully coal and iron together—at least it could not be done on a large scale. Dud Dudley, whom we mentioned above, seems to have been able to smelt small quantities. He was a very persevering man and seems to have gone on with his schemes in spite of great opposition from other ironmasters, who of course were jealous of his skill. A disastrous flood one year destroyed all his furnaces, and he had no support from the Crown. At first he did succeed in getting a patent for his inventions, but this was eventually abolished with other monopolies, and though he petitioned King Charles II. to allow him to renew his patent, nothing came of it. But in 1665 he wrote an interesting little book called "Metallum Martis, or Iron made with Pit-coale, Sea-coale, &c.," in which he gives an account

of his experiments and troubles. He had furnaces in Worcestershire for making pig-iron and forges at Cradley and elsewhere for making wrought-iron, &c., and when his works were destroyed at one place he set them up again at another. He says that he "made annually great store of iron good and merchantable and sold it unto diverse men yet living at £12 per tun. I also made all sorts of cast-iron wares as brewing cisterns, pots, morters, and better and cheaper than any yet were made." First he produced three and afterwards seven tons of iron a week.

THE IRON TRADE AND TIMBER SUPPLIES.

Of course this smelting process used up a tremendous amount of timber. Dudley says two tons of charcoal went to make one ton of iron and two loads of wood to making one load of charcoal, and he estimates that by using coal instead of wood he not only used up tons of small coal which would have been wasted otherwise, but saved the country at least 30,000 loads of wood. There is no doubt that much timber must have been used, for another writer of the early 17th century says that in his time (1615) there were 800 furnaces, forges or iron mills making iron with charcoal.

And so Acts had to be passed restricting the rate of cutting timber. It is certain that such tracts as the Forest of the Weald were destroyed solely by the demands of the iron industry. In the end the destruction of the woods of Kent and Sussex was so great that the iron industry eventually shifted its centre to other areas like Staffordshire and the Forest of Dean.

HOW CHARCOAL WAS MADE.

The accompanying illustration from an old engraving of 1760 shows the methods of charcoal burning.

CHARCOAL BURNING.

In the background are piles of wood for burning. H is a workman bringing fuel to F and E, who are making the floor of a stack by laying down billets of wood with brushwood between. M is a workman completing the stack by plastering it with earth and charcoal dust. P is the completed stack on fire. f, g, h, i show the successive floors of wood in the stack.

Apparently there were three ways of doing it which, differing in detail, were nevertheless the same

in principle. The main stages in all three methods were: (i) A stack of wood was constructed and then plastered over on the outside with a mixture of turf and charcoal dust; (ii) this stack was then set on fire either from the top or the bottom; (iii) great care was taken to see that the stack burnt evenly throughout.

If dry, the wood was reduced to charcoal in $2\frac{1}{2}$ days; if green, in three days.

Before 1760 our colonies in America were producing much pig-iron, and as our manufacturers had not sufficient home supplies, the colonial iron was imported free of duty. But, as usual, the laws prevented the colonies from competing with our manufacture, and no furnaces could be erected in our American plantations.

THE IRON INDUSTRY IN 1760.

A writer of 1760 says "the strongest temper of iron is said to be that which it takes in the juice of strained worms"; which is a reminder of the simple beliefs of the people 160 years ago.

By 1760, then, the full process of making pig-iron was as follows. (You will observe that the methods are very similar to those employed to-day.) The furnace was charged at the top with charcoal and the fire excited by large bellows moved by water. When the whole internal surface appeared of a white heat the ore was thrown in, a little at a time, with charcoal over it and generally a portion of limestone. The ore, gradually melting, dropped down through the fuel into the receiver or bottom of the furnace. The metal, now strongly fused, was let out by a tap-hole into furrows made in a bed of sand. The large mass which set in the main furrow was called by the workmen a "sow" and the lesser ones "pigs" of iron.

"Chimney backs, stoves, garden rollers, &c., are formed of the rough metal taken out of the receiver with ladles and cast into moulds of sand. Two or three tons of iron are run off in twenty-four hours. Before the force of water was called in aid to work the bellows, scarce an hundredweight could be obtained in a day."

The making of "bar" iron was a more tedious affair and necessitated sending a strong blast of air through the mixture of iron and charcoal and then hammering the mass by a hammer worked with water-power and subjecting this mass to repeated forgings until it was completely malleable and ready to be made into bars. From all this it is evident that to improve the industry and to obtain a greater and quicker output of iron and steel what was wanted was first some process which would smelt iron with coal or coke instead of charcoal, secondly a better method of making iron malleable, thirdly the substitution of steam-power for water-power.

All these improvements came with the Industrial Revolution.

Now let us turn to our textile industries.

OUR TEXTILE INDUSTRIES IN 1760.

In 1760 the manufactures of wool, cotton, linen, silk, &c., were in the "domestic" stage. By this we mean that the workers in these industries were still essentially agricultural labourers who tilled their own plot of land and tended their own flocks, but made extra wages by weaving, spinning, carding, dyeing, &c., in their spare time *at home*, i.e., the manufacturing of textiles was done in the cottages. The next stage came when some enterprising manufacturer collected many weaving looms in one cottage or building and kept the workers employed, as we should

say now, "whole time." That is, the workers no longer carried on agriculture as well, but became artisans. As business extended more looms would be added and so a "domestic factory" would arise. Such factories would be placed often near the streams so as to take advantage of the water for dyeing, scouring and power purposes. The finished goods would be taken round the country on pack-horses and sold at the various fairs, or a manufacturer would have agents in the big ports, and even abroad, through whom he could export his goods and import his raw material.

WOOLLEN MANUFACTURE.

In the woollen trade there was much "specialization," i.e., different localities produced different kinds of stuffs, which were often named after the place wherein they were made. Thus "worsteds" came from the village of Worstead, "Kerseys" were made at Kersey in Suffolk, "Kendal green" came from Kendal in Cumberland, "Dunsters" from Dunster in Somerset. The Cotswold towns specialised in "broad cloths," Witney in blankets, and so on. Yorkshire woollens were also important, but the chief centres of wool industry were still in the South and East of England.

The number of sheep in the British Isles was probably about 17,000,000, or about half what it is to-day. The manufactured woollen goods would be worth something like £8,000,000 annually. The supply of raw wool, other than our own, came largely from Spain. Our exports went mainly to our American colonies and the continent of Europe.

Our manufacture of other textiles was run on the same lines.

THE EARLY COTTON INDUSTRY.

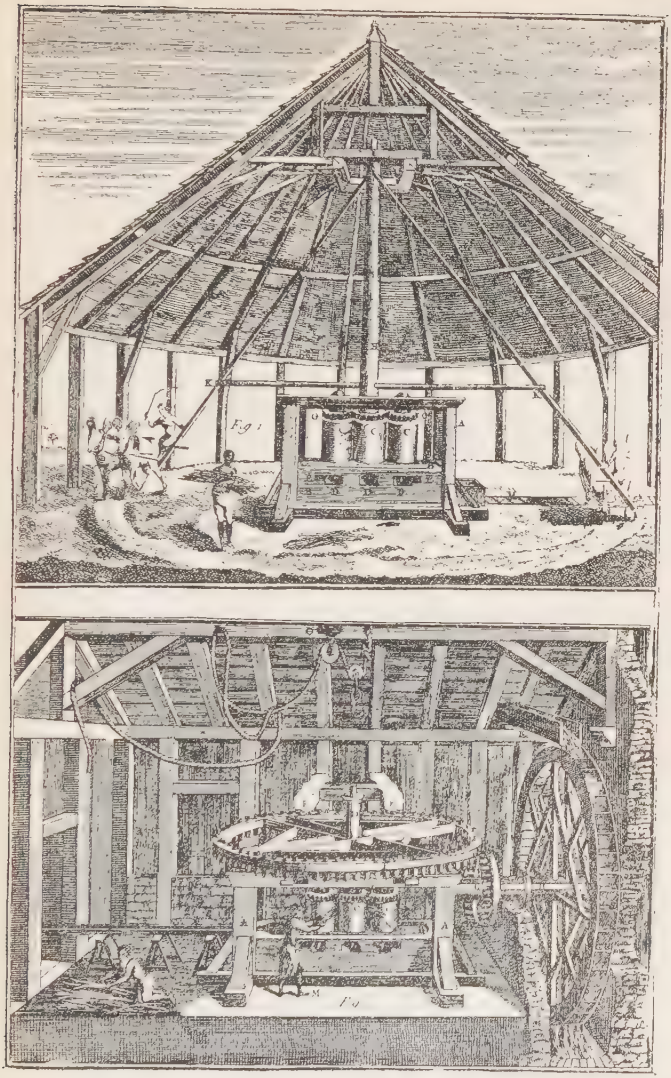
Even then Manchester was the centre of the cotton industry. Raw cotton was imported through Liverpool, Whitehaven and Lancaster, and came from the West Indies, Cyprus, Smyrna and India. Later on, of course, supplies began to come from the cotton states of the U.S.A. There was also a considerable import of linen yarn from the North of Ireland (Derry, Drogheda, Sligo, &c.) and from the old Hansa towns of Hamburg and Bremen. Much of this linen yarn was mixed with cotton to make various classes of what were called "Manchester goods." Notice that we could not yet produce the finer goods, such as muslins, which had to be imported from India.

KAY'S FLYING SHUTTLE.

You must remember that all the processes of textile manufacture in those days were necessarily very tedious and slow, despite the increasing use of water-power.

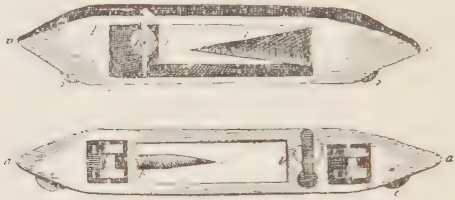
Before the Industrial Revolution the only piece of improved machinery to have an important effect on output was the "flying shuttle," invented by Kay of Bury in 1733. This shuttle carried the weft through the warp much more rapidly than it had previously been done by hand. And of course it enabled a greater width of cloth to be woven. Formerly one man could weave cloth only as wide as he could stretch, or "double width" if he worked side by side with another man and passed the shuttle from hand to hand. So you see Kay's invention was most important because it made work easier, it enabled wider cloths to be woven and, above all, because it quickened the output of the looms.

We see, then, that the requirements of the textile trades were some means by which all the processes,



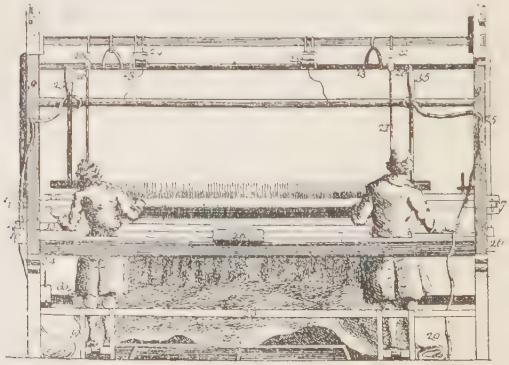
SUGAR MANUFACTURE, XVIIIth CENTURY.
(1) Crushing machinery, showing employment of horse power for driving machinery.
(2) Water wheel driving the machinery.

especially that of spinning, could be "speeded-up." It was this necessity for obtaining a greater and speedier output which brought in the great mechanical inventions we are about to describe.



KAY'S FLYING SHUTTLE.

Some of the primitive means of wool manufacture are shown in the accompanying illustrations.



WEAVING LOOM, 1760.

'TEAZLING' THE CLOTH.

Two workmen are shown raising the "nap" of a piece of cloth by rubbing the surface up and down with a "teazle," which was either the head of the thistle-like plant of that name, or, as in this illustration, a wire-brush in imitation of teazle heads.

SOMETHING TO MAKE.

Why was the early iron industry situated in Sussex? Why did it move from there? Draw a map to illustrate the above facts about the coal and iron industries. Make a simplified drawing in your note book to show how charcoal was made. Draw a map to show the chief centres of the woollen and cotton industries in 1760. Insert the ports for receiving the raw wool and cotton, and draw arrows to indicate where the imports came from.

The following figures approximately represent the population of our more important towns at the beginning of the 17th century. Represent them "graphically" in your note book. Explain why the populations of Manchester, Birmingham, and Liverpool were then so small.

Find out the present populations of some of these towns, and write down the figures in your note book with any explanation you think necessary.

Town.	Population.	Town.	Population
London	500,000	.. Nottingham	8,000
Bristol.....	29,000	... Leeds	7,000
Norwich	29,000	... Manchester	5,800
Exeter.....	10,000	... Birmingham	3,800
York	10,000	... Liverpool	4,000
Derby	4,000	... Shrewsbury	7,000

THE INDUSTRIAL REVOLUTION—ITS GENERAL EFFECTS.

Before we go into details of the more important mechanical inventions, let us look at the changes effected by the Industrial Revolution as a whole. For our purposes it is what was done, not how it was done, that so much matters. Details can take care of themselves and come afterwards. Let us note once and for all that the Industrial Revolution meant a gigantic change *from production by hand to production by machinery.* Now, of course, such a change must bring with it other results no less important. (i) *More output.* This was helped, too, by the improvements in transport, which we shall note presently. And so we became the chief suppliers of the world's markets in manufactured goods. We became "the workshop of the world." (ii) A complete change in the social life of the people—the fields were often forsaken for the workshop. We *get the birth of the factory system*, and in consequence (iii) *a movement of population from the South and East to the great coalfields of the Midlands and the North.* Incidentally this had a very important effect on politics. The House of Commons ceased to represent properly this new distribution of population. And so came the first Reform Bill of 1832.

This migration of people to the towns was assisted by the great changes in methods of agriculture, which were largely due to the increase of population brought about by these social changes. So that we may fairly claim (iv) *an Agricultural Revolution* as another result.

Next, the factory system broke up once and for all the old happy relations between employer and employed. Instead, we get (v) *the beginnings of our modern "Capitalist" system as it is called*—it marks the birth of the *struggle between capital and labour.* Of course, new conditions of trade and a vast expansion of business and commercial prosperity meant that trade could no longer be conducted on the old lines. Adam Smith, by his book "The Wealth of Nations," published in 1776, had argued that trade is more flourishing when it is left to find its own level, as it were, and to flow in channels unrestricted by State or any other interference. And so (vi) *a policy of letting things "go as you please"* was gradually adopted—in the French phrase a policy of *Laissez faire.* This is only another way of saying that "protection" was being given up and "free trade" was becoming established.

Such, then, were the main streams of movement, of progress in the Revolution. For good or ill, they permanently affected the whole course of development of our nation. In a word, they gave us our present industrial and commercial position in the world.

THE GREAT INVENTIONS IN TEXTILE MACHINERY.

Now for the details of invention. Let us take the case of the textile industries first. We have seen that Kay's flying shuttle enabled the weavers to outdistance the spinners in the rate of production. (In

1736 it was said it took four spinners to supply one weaver.) Fortunately it was not long before the spinners more than made up this leeway. By the old hand methods only one thread could be spun at a time. About 1764 Hargreaves invented his "spinning jenny," which could work many spindles at once and which a child could manage. This was the first invention of importance and the result of it was naturally a much quicker production of yarn. Next, Arkwright invented his water-frame, which could be worked by water-power and which allowed a much stronger yarn to be spun. This, then, was invention No. 2.

It was a very useful one, because the stronger threads could be used for warps, whereas the threads spun by the jenny were soft and more suitable for weft.

It may be as well to explain that in weaving the weaver starts with threads placed longways on, and these are called "warp," and through and across these he passes the shuttle containing the "weft" threads. Sometimes the warp and weft would be both of the same material, often they would not.

The third invention was the work of Samuel Crompton, who was born near Bolton in 1753. He produced a machine which combined the principles of the jenny and water-frame, and was therefore called a "mule." By it a much *finer* yarn could be produced, and so at last we were enabled to make the finer kinds of cotton and muslins, which we had formerly imported from India.

All these inventions assisted spinning so much that it became necessary to find further improved methods of weaving. This was accomplished by a Kentish clergyman named Cartwright, who invented a power-loom, i.e., a loom which would actually do the weaving process by machinery.

As might be supposed, all these inventions resulted in a great increase in the rate of production, but a decrease in the number of people required at the work, for no longer was the old handwork of any use. And so before things could settle down many people found themselves out of employment, distress became acute, and discontent led to many riots and the breaking up of much machinery.

Arkwright and Hargreaves both had to move to Nottingham as a consequence of unpopularity.

Nevertheless the cotton industry especially advanced by leaps and bounds, and by 1782 its capital was at least a quarter of a million.

THE DISCOVERY OF STEAM POWER.

But all this machinery would have been useless without power to work it. At first, as you will remember, water-power was used and factories grew up along any stream or river that was handy. In 1769 James Watt, a Glasgow instrument maker, took out a patent for his first steam engine. The importance of steam-power soon became manifest; the factories moved to the coalfields, and before the 18th century was out the steam engine had become the chief power in the factories.

HOW IT AFFECTED THE COAL AND IRON INDUSTRIES.

Now all this machinery meant, of course, a corresponding demand for more coal, iron and steel. Fortunately our mechanical genius was equal to this task also. It is really astounding how as each fresh problem presented itself somebody came forward and solved it. In this case men like the Darbys and Roebuck of Carron experimented and ultimately

found how to smelt iron with coal. Cort discovered the "puddling" process which enabled wrought-iron to be made much more easily than did the clumsy methods we have already described.

Watt's steam engine could provide the necessary increased blast for the furnaces (which, of course, would help steel construction) and power for working machinery in the coal mines. Coal and iron existed together, and so furnaces were erected in Staffordshire, South Wales and in the N.E. coalfield, and the output of iron so increased that not only could we supply our own wants but we began exporting on a large scale.

TWO OTHER IMPORTANT INVENTIONS.

Other inventions followed, of which we have space to mention only two—the discovery of the use of chlorine gas for bleaching purposes, and the great advances in pottery making which are always associated with the name of Josiah Wedgwood.

THE IMPROVEMENTS IN TRANSPORT.

Now the great increase in production necessitated improving the means of transport. The old methods of the pack-horse, the clumsy wooden-wheeled wagon, the inadequate bridges, the terrible country roads (Arthur Young mentions ruts three to four feet deep), would have been unable to cope with the increase of traffic. Three things saved the situation: First, the introduction of the railway due to the invention of the steam engine (we shall deal with this fully later on); secondly, the engineering genius of Telford, Smeaton, Macadam and others led to a great outburst of scientific bridge building and road-making (in fact "macadamised" roads are constructed on

the same principles to-day); thirdly, the beginning of canal construction.

CANALS.

James Brindley built the first canal—the Bridgewater Canal—from Worsley to Manchester. Other schemes followed, as it was seen that water transport is the cheapest form of conveyance. The Grand Trunk and Grand Junction Canals were built, and the four estuaries, which you will remember we discussed when dealing with Roman roads, were linked up by canals with the Midlands. In fact, a regular canal "mania" commenced and many canals were constructed at great cost, often over very unsuitable ground, with the result that to-day they are too inconvenient to administer properly. Yet their benefit at the time cannot be questioned: without them transport would have been unable to cope with the new situation.

SOMETHING TO DO.

On your map of the Roman roads you made previously, insert the canals mentioned above.

THE GROWTH OF THE FACTORY SYSTEM.

Such then, in brief, is the account of the Industrial Revolution, a lasting tribute to the genius of our race. Yet certain features, "after effects," as we may call them, are not pleasant to contemplate, but so affected our whole social and industrial life that they must be alluded to here.

We have said that one of the results of the Industrial Revolution was the beginning of the struggle between Capital and Labour, i.e., between the employer and the employed. This was largely due to the "laissez-faire" policy which allowed the

employer complete liberty to run his factory and his labour as he chose. True, the worker was now also free to accept work or not as he liked, but in practice he was in no way fitted to cope with the employer. In a word, *labour was not yet organised.*

EVILS OF THE EARLY FACTORY SYSTEM.

And what was the result? The horrors of the early factory system—"sweated" labour, forced labour, degrading labour—nothing less than social slavery. The employers were out to make money—human lives were of no consequence to them; human beings were looked upon as mere machines. If a workman fell sick he could easily be replaced, for labour was cheap and abundant. If he were injured at work he received no compensation: there were no "Workmen's Compensation Acts," no "National Insurance" schemes in those days. The State had chosen not to interfere.

The conditions inside the factories were scandalous. Little light, much dust and dirt, bad or no ventilation, "unfenced" machinery. The lives of the workers were worse. In these appalling surroundings they toiled practically all day—ill-paid, ill-fed. For twelve hours and often more the unceasing drudgery went on—men, women and children (often only 6, 7 or 8 years old), all alike engaged in one long round of drudgery, misery and toil. Is it any wonder that the workers regarded the whole "capitalist" system with hatred and loathing?

RESULTS OF THE FACTORY SYSTEM.

So things went on until devoted men like Oastler, Feilden, Lord Shaftesbury and others took up the cause of the worker and forced Parliament to pass a series of "Factory Acts" which restricted the hours

and conditions of labour, brought the factories under the eye of Government inspectors and generally made the life of the workers more tolerable. Eventually, too, the workers combined to fight the employers, and the whole Poor-Law administration was overhauled to the lasting benefit of the working classes. All such measures were of permanent value. But we have had to pay a great price for the evils of the early factory days—the antagonism between capital and labour throughout the 19th century is still with us, though in less acute form, and has worked untold harm by wage disputes, strikes and ever-recurring industrial unrest, which always brings with it commercial stagnation. How to get labour and capital to co-operate and to work together for their mutual advantage and that of the country at large is a problem yet to be solved.

SOMETHING TO DO.

Read up in your history books about the Poor-law of Elizabeth's time.

Find out when workhouses were introduced.

How does the State provide for the poor now?

Write a short essay describing how a modern factory differs from (1) The old domestic factory; (2) The early XVIIIth century factory.

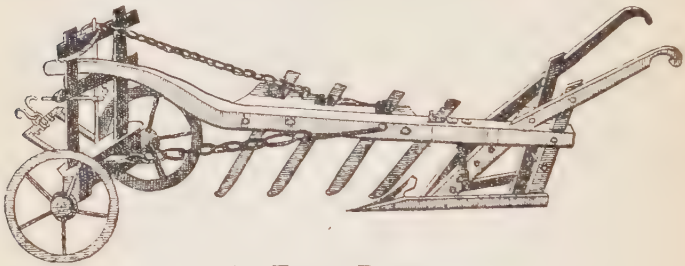
Read Hood's poem, "The Song of the Shirt."

THE AGRICULTURAL REVOLUTION.

We have already seen how England continued to be an agricultural country as late as 1760. The Industrial Revolution brought with it a rapid increase in population, and this increase of course meant a greater drain on the food resources. Half-way through the eighteenth century we were still able to

grow enough corn to feed ourselves and to be able to export a certain amount. About thirty years later we had ceased to export corn at all and had to begin importing.

Now our agricultural system, as you will remember, had continued practically unchanged since the Norman Conquest. We were still going on with the wasteful methods of the three-field system. The increased demand for foodstuffs therefore necessitated more scientific methods of agriculture.



An Early Plough.

EARLY IMPROVEMENTS IN AGRICULTURE.

For some years various efforts from time to time had been made to improve matters. In 1731 a certain farmer, Jethro Tull, had published a book with the title of "Horse-hoeing industry: or an essay on the principles of vegetation and tillage designed to introduce a new method of culture." In it he gave the results of his experiments to improve land by constant hoeing and pulverising of the soil by means of hand and horse hoes and drills. Though Tull made the mistake of believing that in this way there was little necessity to manure the land, nevertheless his inventions and experiments were on the right lines.

Other farmers and landlords like Lord Townshend, Coke of Holkam in Norfolk, and Arthur Young in Sussex, began to introduce the cultivation of root crops, such as turnips, and artificial grasses as clover and rye grass. This was most important, because first it got over the old difficulty of the fallow field, the resting period when land had to lie idle. It was found that the new crops could be grown with the corn and that they kept the soil healthy and constantly employed. Secondly, these crops could be used as winter food for the cattle. Previously a farmer, on the approach of the winter months, had to kill off most of his cattle, as he had means of feeding but a few beasts. The new method meant, therefore, a further supply of fresh meat.

A great advance also about this time was made in methods of marling, manuring and draining soils and in the construction of better implements. Particularly you should note the introduction of the iron plough, to which at first the old-fashioned farmers did not take kindly; in fact, some of them went so far as to say that they preferred the old wooden ploughs because they were convinced the new ploughs made the weeds grow!

THE RESULTS OF IMPROVED AGRICULTURAL METHODS.

What, then, were the effects of all these improved methods of tillage? The farmers, foreseeing increased gains, naturally took more and more land into cultivation; the landlords, noting the increased demand for land, were able to charge more for it, *i.e.*, they raised the rents. In consequence farming became possible only for the bigger farmers, who had enough money to extend their property or actually to buy it outright. Arthur Young, who was secretary to the

Agricultural Board at the time and who made a series of tours over Great Britain and collected valuable information about the state of agriculture in the various districts he visited, says that "Inclosing, marling and keeping a flock of sheep large enough for folding, belong *absolutely and exclusively* to great farmers." Notice the word "inclosing": it introduces us to another aspect of the agricultural change, namely, the abolition of the old common field system. What was the use of a farmer introducing new methods and improvements if his neighbour did not do likewise? So Act after Act was passed making lawful the enclosing of land. It was the old practice of the sixteenth and early seventeenth centuries over again, with this difference: that the object now sought after was land for cultivation, whereas formerly enclosures were meant to help chiefly the sheep farmer.

Even Young admits that the principle of enclosure was good. It was the practical working of the scheme which did much mischief. How? The Acts were put into force only after an enquiry into each case by special "Enclosure Commissioners," who were often in the interests of the large landowners and who failed to see that justice was done to the possessors of "three acres and a cow." The small holders found that enclosures meant the loss of the commons and waste grounds on which they had been accustomed to pasture their cattle and geese, &c. They found also that they were unable to afford the expense of the new improvements. Moreover, during the wars with Napoleon the price of corn varied so tremendously from time to time that farming became a very risky business, in which only those who had much capital could afford to venture. Thus one of the principal results of all these agricultural improvements was the complete disappearance of the yeomen or small far-

mers, who had to seek casual employment elsewhere, perhaps join the army, or seek relief from the poor-rate or migrate to the factory towns and try their luck in some industry. As prices were high and wages did not rise in proportion, much distress and unemployment resulted.

THE CORN LAWS.

Again, despite all the improvements we still could not grow enough corn to feed our population. Yet the Government would not give up the old idea of "protecting" the corn trade. They still tried to restrict the import of foreign corn in order that they might benefit the home farmer and encourage him to grow more foodstuffs. Very heavy duties were put on imported wheat when the price of home-grown wheat was less than 50s. a quarter. When bad harvests prevailed in war time the price eventually rose to 127s. a quarter, and then the Government *had* to lower the corn duty in order to get a sufficient supply for the people. But for many years there was a dearth of food. Finally, in 1846, a serious famine in Ireland and the growing opposition and pressure of the "Anti-Corn Law League," led by two great men, Richard Cobden and John Bright, forced Sir Robert Peel to abolish the Corn Laws and establish the principle of what is called Free Trade.

IMPROVEMENTS IN STOCK-BREEDING.

But there is another side to the Agricultural Revolution, and this we might very well call the "Pastoral Revolution."

People cannot live solely on bread. Meat is equally important. The problem was: how could the

meat supply be increased to meet the growing food demand? We have already noticed that the introduction of winter food for cattle did something towards supplying more fresh meat. But in those days there was no such thing as imports of frozen meat and so the supply was not equal to the demand. What was wanted, therefore, was more scientific breeding of beasts. Hitherto cattle and sheep were estimated in value according to size. It was held that a farmer must aim at breeding beasts big in bone and with plenty of fat. A Leicestershire farmer, Robert Bakewell, proved that this view was altogether wrong. By careful selection and breeding from the best stock he showed that what was wanted was not bone and size but the securing of the greatest amount of meat from a given quantity of flesh and bone. In Arthur Young's words, "The old notion was that where you had large bones there was plenty of room to lay the flesh on. This Mr. Bakewell has proved to be a mistake. He asserts that the smaller the bones the truer will be the make of beast, the quicker she will fatten, and her weight will have a larger proportion of valuable meat." And so it proved. Bakewell's new breeds of sheep were remarkable for smallness of bone, much flesh and greater fineness of wool. To improve his breeds Bakewell travelled all over the British Isles and Holland in search of the right kind of stock. What he did for sheep others did for cattle, and special breeds such as the "Durham shorthorns," the "Devon," &c., soon became famous. The result was that in 1798 the Smithfield Club was founded to encourage breeders by the holding of an agricultural show and the distribution of prizes for the best animals. This show is to-day *the* annual event to the British stock-breeder.

REASONS FOR EXPANSION OF BRITISH TRADE IN EARLY 19TH CENTURY.

With the close of the Industrial Revolution and the opening of the 19th century we reach the period when Great Britain's commerce expanded to undreamt-of proportions. And we may reasonably enquire why it did so.

First, much may be attributed to the establishment of Free Trade. You will remember the Repeal of the Corn Laws in 1846. Sir Robert Peel also entirely reorganised the Customs, took off many duties and lowered the duties on other imports. Other statesmen, like Gladstone, further extended the policy until by 1860 we had given up the idea of taxing imports in order to "protect" our traders, and retained duties on a few imports only in order to make revenue. Nowadays only a few articles like tea, sugar and cocoa, which we cannot produce ourselves, have duties to pay.

All this, of course, made it much easier for foreign nations to trade with us and with one another. This increase of trade naturally led to our seeking new markets. The opening of the Suez Canal made these possible, and the Tropical markets especially were exploited as they had never been before. It also helped in the expansion of our Empire and the growing competition from the U.S.A. and Germany drew us still closer to our colonies.

Yet the history of the British Empire in the 19th century is mainly political. The commerce of Canada took long to develop; India, it is true, developed very quickly, but the commercial expansion of Australia, New Zealand and South Africa is but a thing of yesterday. Yet allowing for all the above factors, it is nevertheless the revolution in means of transport which, after all, was *the* main cause of the trade boom

in the 19th century. Without the improvements in transport and means of communication, expansion could not have taken place in the way it did, new markets could not have been opened up, the British Empire could hardly have held together. If there is one outstanding feature in the commercial history of the last century it is transport development. So it will be necessary for us to study it more carefully.

THE REVOLUTION IN TRANSPORT.

We can examine the history of it in our own country, for it was here that it first began to develop, we can note its wider importance and we can see how our transport is worked to-day.

THE DEVELOPMENT OF THE RAILWAY—THE INVENTION OF THE STEAM LOCOMOTIVE.

The first railway, no doubt, was constructed of wooden or iron rails laid down on a roadway with the object of lessening the weight of the coal wagons being dragged from the pit's mouth. Towards the end of the 18th century such tramways were in use at most collieries. After Watt's discovery of the use of steam for power purposes, many inventors attempted to construct a steam locomotive. It is generally agreed that George Stephenson constructed the first successful locomotive, which he used at the Killingworth Colliery, where he was chief engineer. The first actual railway in the modern sense of the word was that between Stockton and Darlington, which was opened in 1825 and which originally was meant for goods traffic, but afterwards was used for passengers as well. The success of this line encouraged other schemes, chief of which was a project for a railway between Liverpool and Manchester.

The directors, in order to get the best type of engine, offered a prize of £500 for an engine which should fulfil most satisfactorily certain conditions in a practical trial. Among the conditions for the competition were the following:—The engine, with water, must not weigh more than six tons. If of six tons weight it must be able to draw after it day by day twenty tons weight *at 10 miles an hour*. The engine and boiler on six wheels must not exceed 15 feet in height. The price was not to exceed £550, and the whole was to be ready for trial at Rainhill (near Liverpool) by October 1st, 1829.

Four locomotives entered for the competition. They were "The Novelty," "The Sans Pareil," "The Perseverance," and "The Rocket." The last-named was George Stephenson's engine. When the actual trial came all the engines, save the Rocket, repeatedly broke down, mainly through boiler trouble, so George Stephenson carried off the prize. On the first day the Rocket did twelve miles in 53 minutes. The next day it carried a coach of passengers at thirty miles an hour; finally, after the award had been given, Stephenson ran the engine alone at the then astonishing speed of 35 miles an hour.

THE GROWTH OF OUR RAILWAY SYSTEM.

The Rainhill trials once and for all settled the claims of the locomotive. The Liverpool-Manchester line was constructed: its success was complete and decisive. The journey in those days occupied 1½ hours by train; previously it had taken four hours by coach. Five years after the opening the line was carrying yearly close on half-a-million people. It was a great triumph for Stephenson and others who had long believed in the possibilities of rail transport, and a great blow to those who predicted appalling railway

disasters and the deaths of flocks and herds in the fields owing to their not being able to stand the shock of seeing the "iron horse" rush by at such terrific speed. Anyhow, a railway "mania" set in. You will remember the canal mania we talked about: hundreds of Acts of Parliament were passed, thousands of miles of rail were constructed and many railway companies were formed.

OUR PRESENT RAILWAY SYSTEM.

In the end the smaller and less important lines were absorbed by the larger. To-day we have eleven very important companies in England and Wales and two in Scotland. The total length of railway track (excluding sidings) in Great Britain is 23,000 miles, and before 1914 the average number of passengers carried annually was about 800 million and the average mineral traffic nearly 500 million tons.

SOMETHING TO DO.

1.—Read in your history books any further facts about the Rainhill trials. Then write a description of the opening of the Liverpool and Manchester railway, as it might have appeared in a daily paper of the following day.

2.—To gain a good idea of the dangers and difficulties of travelling by coach in the 18th century read an account of the state of the roads, the highwaymen, etc., in Macaulay's History (Chapter III.). For coach travelling a century later, Dickens' "Nicholas Nickleby" or "Pickwick Papers" will supply illustrations. Shakespeare's "Henry IV." (Part I.) depicts the mediæval inn and robbing of travellers.

3.—Write a short essay comparing water, rail, motor, and aerial carriage as means of transport.

THE BEGINNING OF STEAM NAVIGATION.

Now let us look at the second great revolution of transport during the last century—steam navigation.

While the experiments to make a steam locomotive were proceeding, engineers were also trying to solve the question of transport by steamship. It was a slow business, for people were loath to give up their faith in the old sailing vessels. It is generally admitted that the credit for the construction of the first steamer must go to an American engineer, Robert Fulton, who in 1797 successfully completed the task. A few years later an English engineer, Symington, built our first steamer. But the man who did most to further the cause of steam navigation was a Scotsman, Henry Bell, who in 1812 constructed the "Comet" and proved decisively that the steamship had come to stay.

At first sails and steam were used together, and it was not until 1838 that the Atlantic was first crossed by a vessel propelled solely by steam. With the advance in engineering science, the old wooden sailing ship gave way to the iron vessel, which in its turn was superseded by the steel ship.

Meanwhile marine engineering made further strides—larger and larger vessels were built and much improved types of marine engines invented.

THE SHIPPING WORLD TO-DAY.

So to-day we have the "Turbine" engine, huge liners of over 50,000 tons, with a speed of 26 knots, oil-fuel and a host of other improvements. You should particularly notice the increasing number of vessels which burn oil-fuel. In 1919, 211 vessels of 1,193,650 tons were classed as fitted for this purpose. By June, 1920, this number had risen to 426 vessels of 1,995,788 tons gross.

The shipping world is indeed a fascinating subject: you cannot study it too closely. The carrying trade is performed by what we call "the mercantile marine," and the seamen employed in this calling are said to belong to the merchant service.

OUR MERCANTILE MARINE.

In 1913 the world's shipping totalled about 47,000,000 tons, to which the British Empire contributed 11,000 vessels of 20,000,000 tons, i.e., we owned nearly half the world's shipping. Of course, during the Great War our losses in ships were very heavy—something like 7 or 8 million tons. We have, therefore, a great deal of ground to recover, but we are making great efforts, and the latest figures show that for the year ended June 30th, 1920, we had built 594 vessels of 1,391,808 tonnage. We are evidently keeping up our reputation.

Shipbuilding is now a very expensive business, and the upkeep of a fleet of "liners" is very heavy. So, as in every other branch of commerce, it means that a shipowner or shipping firm must be able to control a large capital and that the companies with the most money take the largest share of trade and gradually absorb the smaller companies. In this way great shipping "combines" have been formed. For instance, there is the "Cunard" shipping group, the "P. and O." group, the "Royal Mail" combine, and so on.

You should read up all you can about our great shipping lines.

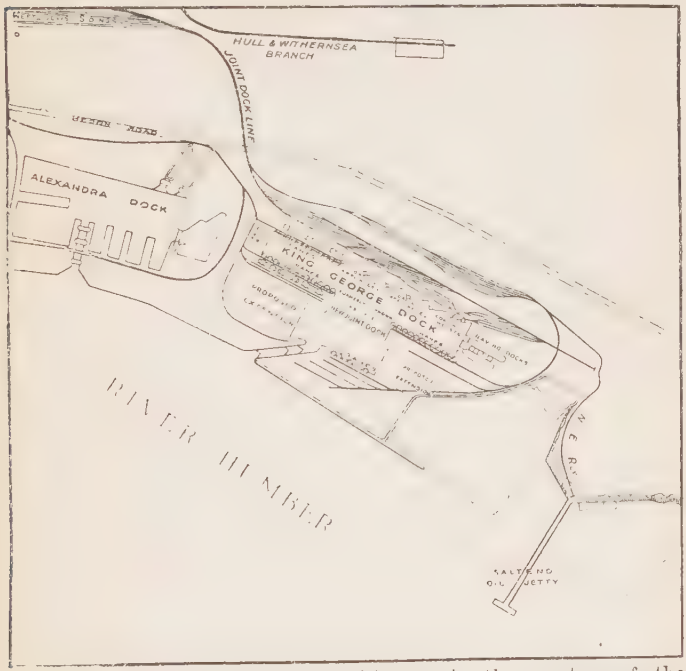
HOW GOODS ARE HANDLED AT A BIG PORT.

You should also take the first opportunity of visiting the docks of a large port and of seeing how the traffic and transport is organised.

You should notice the many ingenious devices used such as electric belt conveyors, automatic filling and weighing machines, electric and hydraulic cranes; the vast warehouse accommodation; huge grain warehouses, called "silos"; ponds for timber storage; tanks for oil; cold storage warehouses for frozen meat, and so on.

AN EXAMPLE—HULL DOCKS.

The accompanying illustration shows a plan of the recently-constructed King George Dock at



(From the "Port of Hull Annual," 1920, by the courtesy of the Editor.)

Hull, which belongs jointly to the North-Eastern and Hull and Barnsley Railways, and is fitted with all the latest improvements in machinery and dock accommodation. It is worth while to study one or two of its details.

Notice, first, the coaling appliances and the way they are placed.

As the outlet for the Yorkshire coalfield, Hull ships annually some 7,000,000 tons of coal, partly as export, partly for bunkering purposes. Thus, coal being so important an item in the port's trade, everything is done to ensure rapid handling of the material.

A vessel enters the King George Dock and takes up its berth opposite one of the coaling appliances, which communicate by electric conveyor belts direct with the coal trucks on the railway sidings, as is shown in the plan. In this way 800 tons of coal can be put into a ship's hold in *one hour*. If the work were done by gangs of men working from a coal barge alongside the steamer, the amount shipped per hour would be about 20 tons. In this case machinery works forty times as fast as hand labour.

Or again, suppose a ship arrives with a cargo of wheat. She proceeds to a berth immediately opposite the grain silo (shown in the plan). Again electric belt conveyors or some other mechanical device will transfer the grain direct from the ship's hold to any floor of the silo. Conversely, if a consignment of grain has to be sent off by rail, the grain is by an automatic machine loaded into sacks and weighed, and the sacks are in the same way transferred directly into the railway trucks waiting on the sidings below the silo.

The oil-jetty shown in the figure is 1,500 feet long and so reaches deep enough water to allow the largest oil-tankers to discharge their cargo by pumping through pipes which connect the ships directly with

the storage tanks. Many oil-tankers carry as much as 15,000 tons of oil, and this quantity can be discharged by the above methods into the tanks *within 48 hours.*

The arrangement of cranes, also, is ingenious. On the left side of the dock, as a ship enters from the Humber, there is a double row of cranes. The second row consists of six $1\frac{1}{2}$ ton cranes working along the *roofs* of the warehouses. On the opposite side of the dock you will notice three more of the same kind. The dock-side cranes are so arranged that one 10-ton crane and three 3-ton cranes can work cargo to and from the same ship.

Of course, this dock is but one of many that the port of Hull possesses. All these modern improvements have helped to make Hull the third chief port in the United Kingdom. In 1913 the following were the figures for the port's trade :—

Imports..... Valued at £49,840,283
Exports..... Valued at £37,760,134

The accompanying figures show merely a portion of the year's exports from Hull. They give some idea of the varied merchandise handled at a big port.

PRINCIPAL AND OTHER ARTICLES.		1913.	1913.
			£
Chemicals and Chemical Preparations ..	Value	—	419,764
China and Earthenware	Cwts	167,131	140,422
Coal, Coke, and Manufactured Fuel	Tons	4,728,787	3,263,001
Corn, Grain, etc.	Cwts	1,010,472	353,708
Cotton Waste from Worked Cotton	Lbs.	2,721,100	47,527
Cotton Yarn	,,	28,569,500	2,413,880
Cotton Manufactures :—Piece Goods	Yards	147,205,400	2,378,577
Other than Piece Goods	Value	—	405,604
Cycles and parts thereof ..		—	410,812
Fish of all sorts	Cwts	333,039	231,156
Grease, Tallow (unrefined), and Animal Fat .	,,	80,733	68,113
Hardware		24,841	86,336
Hats	Dozens	44,998	76,352
Implements and Tools (except Machine Tools)	Value	—	392,491
Instruments and Apparatus Scientific, and Parts thereof (other than Electrical), including Cinematograph Films	,,	—	89,511
Jute Manufacturers : Piece Goods	Yards	8,205,600	114,362
Leather and manufactures thereof (excepting Boots and Shoes, and Machinery Belting) .. .	Value	—	234,305
Linen Yarn..	Lbs.	1,189,200	99,684
,, Manufactures : Piece Goods	Yards	1,860,900	58,325
,, Other than Piece Goods ..	Value	—	43,981
Machinery	Tons	90,303	4,252,929
,, Belting : Leather ..	Cwts.	13,278	197,292
Other than Leather . . .	,,	12,660	120,536
Manures	Tons	73,578	485,393
Medicines	Value	—	26,918
Metals :—Brass, and Manufactures thereof .	Tons	1,255	168,585
Copper, Unwrought and Wrought . .	,,	740	71,536
Iron and Iron and Steel Manufactures ..	,,	109,442	1,860,846
Tin, unwrought	,,	33	7,800
Unenumerated in Export List, and Manufactures thereof	.	248	28,607
Motor Cycles and parts thereof .. .		—	40,080
Oil	Value	—	1,124,115
Oil Cloth	Sq. Yards	4,389,400	210,793
Oil-seed Cake, not sweetened	Tons	40,842	271,239
Oleo-margarine and Refined Tallow and Animal Fat .	Cwts.	33,236	63,798
Painters' Colours and Materials	Cwts.	205,360	194,691
Rubber Manufactures (except Apparel Waterproofed and Tyres and Tubes), including Boots and Shoes .	Value	—	108,525
Ships and Boats, New (not registered as British), with their Machinery ..	Gross Tonnage	16,579	235,371
Skins and Furs	Value	—	169,444
Stationery, other than paper . . .	,,	—	104,539
Wool :—Sheep's or Lambs' . .	Lbs	10,849,200	779,040
Waste	,,	4,461,400	276,689
Noils	,,	9,298,900	640,892
Tops	,,	11,235,400	893,867
Woollen Rags : Pulled (Shoddy and Mungo) .. .	,,	5,341,400	158,568
Woollen and Worsted Yarn	,,	10,645,100	1,116,212
Yarn, Alpaca, Mohair and other Sorts	,,	8,896,700	852,488
Woollen and Worsted Manufactures —Piece Goods ..	Yards	6,903,300	876,248
Other than Piece Goods	Value	—	177,115
Parcel Post	Number of Parcels.	42,209	80,109
All other Articles	Value	—	1,286,216
TOTAL	,,	—	29,220,174

SOME EXPORTS FROM HULL IN 1913.
(From the "Port of Hull Annual" by the courtesy of the Editor.)

PART III.

THE "PACIFIC" PERIOD.

From the point of view of the development of modern commerce, besides the revolutionary changes in means of transport which we have already discussed, one of the most significant facts in the 19th century has been the establishing of new trade routes by the cutting of the two great Canals—the Suez and the Panama.

These two projects have opened up what we may call our third period of commerce, viz., the Pacific.

By this we do not imply that the Pacific Ocean is now the most important ocean commercially—far from it. We mean that this ocean, which for various reasons has been backward commercially, has at last entered on a new phase of trade activity. In other words, the routes across it are now being developed and are becoming ocean highways of increasing importance.

So that it is safe to say that we may in the near future look forward to a great expansion of trade along the coasts of and between the countries bordering this ocean. We shall make the position clearer as we proceed. Meanwhile let us note:—

THE SUEZ CANAL.

The Suez Canal was opened in 1869. It is roughly 100 miles long. At first it had a minimum depth of 26 feet and a width of 72 feet. Since, it has been

improved from time to time until at the present day it can accommodate ships drawing over 30 feet of water.

The effects on the trade routes to the East and Far East were very marked. The sea route to India was greatly shortened. Moreover, passengers could shorten the sea voyage still further by travelling overland to Marseilles or Brindisi and embarking from these ports.

As sailing vessels cannot use the Red Sea, the Canal route had the further effect of encouraging the steamship.

Moreover, the route to Australasia via Suez is about 900 miles shorter than that via the Cape, and this to a cargo vessel means a gain of three days in point of time.

The immediate results of the opening of the Canal were a great expansion of trade with India, especially as regards our import of Indian wheat, and an increase in the trade between the East and the Mediterranean ports. No doubt, also, it stimulated the trade of Japan and enabled her to compete in the Western markets.

When the Khedive of Egypt sold his shares in the Suez Canal Company, Disraeli, who was then Prime Minister, bought them for £4,000,000. This was a great stroke of business, because we not only get something like a million pounds annually from the interest on the shares, but we have gained in this way a substantial voice in the administration of the Canal. The number of vessels passing through the Canal has steadily increased. In 1912 the tonnage amounted to nearly 20,000,000.

You should notice how we control the main strategical points on the route to the Far East—Aden, Socotra, Colombo, Singapore and Hong Kong eastward; Malta and Gibraltar westward.

SOMETHING TO DO.

From the following figures draw a graph representing the amount of shipping passing through the Suez Canal annually:—

Year.	No. of Vessels.	Year.	No. of Vessels.	Year.	No. of Vessels.
1900	3441	1904	4237	1908	3795
1901	3699	1905	4116	1909	4239
1902	3708	1906	3975	1910	4533
1903	3761	1907	4267	1911	4969
				1912	5373

THE PANAMA CANAL.

The Panama Canal, which was opened for traffic in 1915, is roughly half the length of the Suez Canal. Owing to difficulties in its construction the cost was about £100,000,000, or five times the cost of the Suez Canal.

The main obstacles to the building of the Canal were the unhealthiness of the climate, the fact that the Canal could not be constructed wholly at sea-level, and the necessity for making a gigantic cutting through the Culebra Hill.

The whole project was a colossal affair—for instance 50,000 workmen were employed at one time—and the story of the Canal's construction should be read by everyone, if only to get some idea of what has to be done and what can be done by perseverance and ingenuity in man's struggle against nature.

The Canal consists of three parts—a lake (164 square miles) formed by damming up the Chagres river, and two channels leading from the Atlantic and Pacific Oceans to the lake. As the surface of the lake is normally about 85 feet above sea-level and the connecting channels are at sea-level, ships are

lifted from the channels to the lake or lowered from lake to channel by means of gigantic locks.

The minimum depth of the Canal is 41 feet; the width of the locks 110 feet. There are a huge dry dock and extensive workshops for ship repairing and, of course, large supplies of coal stored for bunkering purposes.

The Canal has not been long enough in existence to enable us to form an estimate of its exact effect on the trade routes of the world, at least for the present. But you should note most carefully the following points.

POSSIBLE EFFECTS OF THE PANAMA ROUTE.

The Canal shortens the route between the east and west coasts of North and South America by a half, e.g., New York to Valparaiso (Chile) via the Magellan Straits is 8,461 miles; via Panama it is only 4,630 miles.

More important still is the fact that New York is now 3,000 miles nearer to the western ports of America than is Liverpool.

Again, the Panama route brings New York a thousand miles nearer to Melbourne than Liverpool is by any route.

On the other hand, the ports of Western Europe are by this route further away from the Far Eastern and Australian ports than they are via Suez, though there is a slight saving in mileage to the ports of New Zealand.

Even from the above few facts it is clear that the ports of the U.S.A. gain greatly by this route at the expense of our ports and the ports of Western Europe. To put it another way: If we regard this question of distance only, we may expect to see a good deal of our carrying trade with the western ports

of the American Continent pass into the hands of the United States' mercantile marine.

On the other hand, Canada and the West Indies will gain by this new route.

Distance is, however, not the only consideration. For instance, there is the coaling supply. Whence will the coal for the bunkering depots at Colon or Panama be obtained? The nearest American coal-field is in Alabama. Port Said gets its supplies from South Wales. Compare the distances. U.S.A. coal is more easily mined than South Welsh coal. Do you think, then, that bunkering will be cheaper at Panama than at Port Said?

Again, a shipowner has to consider the question of cargo. He must obtain return cargo as well as outward cargo. This is where the Suez route scores. There are many more opportunities for picking up full cargoes on the Suez route than there are on the Pacific routes. A U.S.A. vessel might steam with a full cargo for, say, Wellington (N.Z.), but be unable to obtain a full return cargo; in which case it might have to return via Suez, even if its outward voyage was via Panama. Now that oil fuel is so important, both Port Said and Panama may become oiling ports. In this case you would have to consider the nearest oil supplies to these ports.

SHIPPING ON THE PACIFIC ROUTES.

The following are some of the shipping lines now working the Pacific trade routes:—

The Canadian Pacific Ocean Services, Ltd., have a regular service between Vancouver and the Far East. Two liners (nearly 17,000 tons each) carry on a regular passenger service between Vancouver and Yokohama, calling at the ports of Kobe, Nagasaki, Shanghai, Hong Kong and Manila.

The C.P.O.S. also has cargo vessels on this route, plying between Vancouver and Seattle, and between Vancouver and the northern ports of British Columbia and Alaska.

The C.P.O.S. is a most important concern, as it is run by the Canadian Pacific Company, which owns the most extensive railway system in the world.

Another Company works the route between Vancouver and New Zealand. This Company (Union Steamship Company of New Zealand) is a member of the great P. and O. shipping combine. It has monthly sailings from Vancouver via Honolulu and Suva to Auckland and Sydney (N.S.W.).

The Shaw Savill and Albion Line—belonging to the "International Mercantile and Marine" combine—has monthly services between London and New Zealand via the Panama Canal.

The Pacific Steam Navigation Co. (P.S.N.C.)—in the "Royal Mail" combine—has services from Liverpool, London and Glasgow to the west coast of South America via Panama.

And there are several other services we have not space to mention.

There is a considerable trade between New Zealand and Australia, between New Zealand and the various Pacific Island groups, and between Australia and the Western States of South America.

With the prospects of increased trade between Canada and Japan, with the increasing importance of the copra (as essential to margarine production) and nitrates of the Pacific Islands, the sugar of Hawaii, the coal export of Australia, the cotton of Peru, the mineral products of the Western States of South America, it is clear that in the near future there will be a great extension of commerce along the trade routes of the Pacific Ocean.

SOMETHING TO DO.

Supposing a cargo steamer is despatched from London to Melbourne, which route do you think would be the better, via Suez or via Panama? Give your reasons in full. Write the question and answer in your note book.

Supposing a *sailing* vessel were to sail from London to Melbourne and back, describe its outward and return route. (Use a map showing the direction of the prevailing winds.)

Insert the above routes (giving distances) in a blank map of the world.

On the same map insert the above-mentioned shipping lines across the Pacific.

SUMMARY OF OUR COMMERCIAL DEVELOPMENT.

We have now reached a point where we may very well summarize the chief landmarks in the history of the development of our commerce.

I. Commerce has passed from local regulation to strict State control, and so to complete freedom of trade.

II. Markets have widened from being first of local then of national importance, until to-day they are *world*-markets, *i.e.*, commerce is now international in scope; it is impossible for a country to remain commercially isolated. This is the result of the scientific inventions and discoveries we have described in previous pages.

III. The relative importance of products, for exchange purposes, has entirely changed. Formerly trade in the bulky articles and perishable foodstuffs was very restricted. Now some of the most valuable trade is in

coal, iron, steel, cereals, meat and fish. This is also the result of the aforementioned scientific inventions.

IV. For similar reasons we are now assured of our food supplies *all the year round.*

V. The improvements in transport and the spread of commerce have caused—

(*a*) A rapid growth of great industrial towns (often with a ring of suburban towns specialising in various phases of a particular industry), *e.g.*, Manchester and the Lancashire cotton towns; Birmingham and the "Black Country" towns.

(*b*) The growth of the British Empire.

So world-wide, then, is production and competition in the exchange of commodities that commerce is now a most complicated and delicately adjusted concern which needs the nicest judgment and most minute and careful organisation. Let us now see how our commerce is organised to-day. We shall then be in a position to understand more clearly the main features of our trade—features which we shall summarize in the concluding paragraphs of this book.

HOW COMMERCE IS ORGANISED.

I.—BY THE STATE.

(*a*) By the Home Government.

There are many ways in which the State can help the country's commerce. For instance, there is a Government Department, "The Board of Trade," with a responsible official at its head. It is the business of the Board to control such things as weights and measures, to see that railways and tramways are kept in working order, to see that ships are

not overloaded and that they are seaworthy—generally to superintend the navigation and mercantile marine of the country. A special Department of the Board deals with the collection and publishing of all kinds of trade statistics and information which may be of assistance to our merchants. Such information is published in a monthly "Board of Trade Journal" and other "Blue Books," as such Government publications are called. Information about out foreign trade is supplied largely by our Government trade representatives abroad, who are called "Consuls" and who reside at all important trade centres and ports. This information, though often badly arranged, consists of valuable matter and statistics which cannot be obtained elsewhere. It is issued as "Consular reports," which are sold for a few pence by H.M. Stationery Office. In recent years the "Department of Overseas Trade" has been established to help still further this portion of the country's commerce. Then, too, there is the "Board of Agriculture and Fisheries," which looks after the interests of the farmers and fishermen. There are many who think there should be a separate Ministry of Fisheries, for certainly the fishing industry is important enough to justify such a step.

During the Great War our commerce was very strictly controlled by the State, and many new Government Departments were created. Such were: the Ministry of Food, the Ministry of Transport, the Ministry of Shipping, &c. How far these will remain permanent institutions it is difficult to say.

(*b*) By Colonial Governments.

In 1907 the Government sent to the great self-governing dominions representatives called "Trade Commissioners," whose duty it is to encourage in every way commerce between the colonies and the

Mother Country. So succeessful has been the scheme that all the important colonies and India now have in this country Commissioners whose headquarters are in London. If you are interested in the British Empire, and everyone should be, or if you are a likely emigrant, you can obtain a great deal of information and a mass of interesting literature about the colonies from, say, the Australian Commonwealth's headquarters in the Strand, or those of Quebec in Kingsway.

Our Colonial Governments are commercially very enterprising and have lately undertaken some novel and interesting schemes. For instance, the Australian Government has begun to run its own line of cargo steamers.

THE EXAMPLE OF CANADA.

Even more interesting is the enterprise of the Canadian Government, which is trying to develop Canadian trade by establishing new trade routes from Canada. For this purpose it is co-operating with big shipping companies, the Cunard, the British India Steam Navigation Company and the Holt Line, and has formed a business concern called "The Canadian Government Merchant Marine, Ltd." The idea is that the Government supplies half the number of vessels, of which there are already 36 in commission, and the use of the vast system of Government railways (22,000 miles of track), while the shipping companies named supply the expert shipping staff as well as a certain number of vessels. Lines are already in operation to the largest English ports, to India, to Australia and the West Indies; shortly lines to South Africa and the Far East will be established. By the latter lines our merchants will be enabled to compete with more prospect of success in the Pacific markets.

This partnership of State and private company is a novelty. It will be very interesting to watch the commercial results.

HOW COMMERCE IS ORGANISED.
II. BY THE EMPLOYERS.

Now though the State may assist in such ways and in others we have not space to mention, yet the real development of our commerce depends on our merchants and manufacturers and their employees. So both employers and workers have organised for the purpose. Let us see how this organisation works in practice.

In all towns of commercial importance the merchants form themselves into "Chambers of Commerce," which deal with all questions affecting our trade and industries. Abroad our merchants do the same. Each trade, also, is organised on its own lines, the employers organising themselves into "Federations" in order to safeguard their interests; for they believe that in unity there is strength.

(*a*) By Business Combines.

Similarly the intensity of competition has been met by companies and firms forming themselves into "combines." In this way they can control more money and resources—"capital" as we may call it—and it is the firm with the longest purse and the widest control over raw material that has the greatest chance of success. These great combines are, in fact, one of the outstanding features of modern commerce.

Take as an instance the firm of Lever Brothers, of Port Sunlight fame. The founder of the firm, W. H. Lever, now Lord Leverhulme, started as a grocer's assistant, later bought up a small soap factory at Warrington, and by hard work, organising genius and

bold advertising rapidly built up a huge business. A new factory was built on the banks of the Mersey, practically at the entrance of the Manchester Ship Canal. To this establishment was given the ingenious name of Port Sunlight. In 1894 the Company's capital was 1½ million pounds. Since then it has gradually bought up other companies of various kinds until now it can control a capital of something like £130,000,000. The Company now manufactures, besides soap, glycerine and margarine, controls other enterprises such as jam-making and fishing, owns most of the shares in the Niger Company, thus securing an immense supply of oil nuts and seeds; owns its own coconut plantations in the Pacific Islands, the Congo and West Africa, and has factories in Belgium, Germany, France and Switzerland. It is a colossal enterprise. It shows what can be done by advertising on a large scale by up-to-date and business-like methods and by the proper organisation of capital.

To these qualities, also, is due the success of the great commercial stores or "multiple shops," such as "Selfridges" and "Harrods," which make a feature of such minute division of labour and careful organisation that they can sell under one roof all that their customers may require.

The merits and disadvantages of such combines we cannot discuss here. What we have to notice is how they organise their resources and obtain the large sums of money necessary to develop their business. Remember that the term "capital" is somewhat loosely used. Sometimes we use it to mean merely money, yet in its widest sense it means more. A man needs money to start his business. But we must be quite clear that once he has started, bought his necessary machinery, erected his workshops and so forth, all these things become so much further capital which can be used to develop his industry.

Let us see how the necessary capital—using it in the sense of " money "—is obtained.

(*b*) By Organising Capital and Credit.

We can trace the first need of capital on a large scale to the beginning of the factory system, when the great growth in output, due to the development of machinery and the necessity of employing many persons in one business, forced the employers to get control over more and more money. How was this done? The answer is by what is known as " credit " and by the banking system. And this is how it is done now.

THE MEANING OF CREDIT.

If you have not sufficient money to develop your business you have to borrow; which means that you borrow either from the bank or from other people whom you induce to put money into your business and who are called " shareholders." In either case you are obtaining " credit." You must note this carefully, for it is only by an extensive use of it that modern commerce can be carried on. You see, credit (Latin " credo," I believe) simply means belief in people's ability and good faith to pay debts. We will say you borrow £1,000 from the Bank. True, you have to pay interest on the sum, but the Bank lends it to you only in the belief that your business is a sound one and that by its extension you will be able in reasonable time to pay back the £1,000. The growth of the Banking system is comparatively modern. The first Bank to be established was the Bank of England in 1694. Formerly people used to put their money into the hands of the Goldsmiths, who kept it safely for them, and were, of course, paid interest for so doing.

THE NECESSITY FOR CREDIT.

You must be absolutely clear that it is only the ability of merchants to obtain extensive credit from the public and from banks that enables the wheels of modern commerce to go round. Huge transactions, involving perhaps millions of money, are carried out every day in business largely by cable and telephone and by ingenious devices such as paper money (bank notes) and bills of exchange. Not a penny of hard cash may change hands from one merchant to another. The transactions are negotiated through the banks—and only then by means of credit.

(*c*) By Organised Advertising.

Another direction in which organisation is essential is advertising. No matter how well known a firm is, it must continue to advertise, to keep its name before the public, or it will see its annual profits gradually diminish. To make the name of your firm well known, to retain trade when you have it and to develop its resources, you must advertise and advertise. You can hardly overdo this part of the business. And advertising means much more than merely putting notices of your wares in the daily papers. It means enterprise, initiative, both in the home and foreign markets. You must have smart and business-like "travellers," some of whom you will have to train especially for the foreign trade. You must send them to the various world markets to study the trade conditions on the spot and to note the peculiarities of local requirements. It will pay you also to exhibit at the various International Trade Exhibitions which are held in different centres all over the world from time to time. On such occasions an attractive display of your productions and tactful persuasion by your representatives will result in the opening up of

new markets and the booking of orders worth any amount of money.

All this makes for the spread of commerce, and all can be done if you organise your resources.

So much for commercial organisation from the employers' point of view.

III. ORGANISATION BY THE WORKERS. TRADE UNIONS.

And the workers have proceeded, and quite rightly, on the same lines. They have gradually built up the "Trade Union" system, a system which was the outcome of the early factory days when the worker was "sweated" by the capitalist employer. Of course, there are still "sweated" trades, but their numbers are diminishing, and now all the chief industries have their "Union." The object of these combinations of workers has been to see that the worker is fairly treated by the employer. The results have been far-reaching. The hours of work have been reduced to reasonable limits—many trades now have an eight hours' day—wages have been raised, factory and house accommodation improved, and in general the worker has obtained conditions which enable him to live, if not a luxurious, at least a decently ordered life as a respectable citizen. There is still much to be done to improve the health of employees, and it is a good sign that employers have at last realised that not only does a sick employee mean so much loss in production, and therefore in money, but that a healthy and contented staff is an advertisement in itself.

Within the last few years the Trades Unions have perfected their organisation, so that several unions may combine together and agree, if necessary, on common action. In this way has developed what is

known as the "Triple Alliance," *i.e.*, the combination of the unions of coal miners, railwaymen and transport workers.

Now the method by which the workers can, if necessary, get their demands satisfied is the well-known method of the "strike." So you see that in the case of the Triple Alliance if a dispute in which one of the unions is involved leads to its declaring a strike, the other two unions may strike "in sympathy." Whether strikes are justified or not does not concern us here. What we have to note is that the effects of a strike are always most serious from the point of view of the country's commerce. Trade is dislocated, orders cannot be executed and unemployment may become acute.

POSSIBLE FUTURE SCHEMES OF ORGANISATION.

Probably a good deal more will be done to develop "co-operative" and "profit-sharing" schemes which, in general, aim at encouraging the worker to take a closer personal interest in his business.

There are many who think that we might very well extend the system of State control, so that the State might organise and control, for instance, the transport services and the coal mines. Others believe that a solution will be found in some scheme in which public control will be substituted for private control over industries in such a way that industries will be run by the various groups of workers concerned in them.

At any rate let us remember once and for all that capital and labour are not necessarily antagonistic, but are mutually dependent, and that *both* are vital to the welfare and extension of our commerce.

A BRIEF SURVEY OF OUR COMMERCE TO-DAY.

So far we have been studying our commerce from the point of view of its history. It is now time for us to try to understand our present-day trade. What we as a nation sell to other nations is, relatively, more important than what we buy from them. So as our exports are the most important part of our trade, we can very well begin by studying three great classes of export, viz., textiles; coal; and iron and steel manufactures.

OUR TEXTILE EXPORTS, (a) COTTON.

Of these three industries, the textile is the most important. It is estimated that a century ago the value of our cotton, woollen, silk and linen trades was about £22,000,000 annually. In the 19th century it averaged about £200,000,000, and the value of cotton goods alone has been over £100,000,000 a year. This industry has, indeed, gone up by leaps and bounds since the Industrial Revolution, and now employs hundreds of thousands of workers and pays many millions of pounds in wages every month.

You will remember that towards the middle of the 18th century Lancashire was beginning to be the centre of the industry; and though since then Glasgow, Paisley, Nottingham and Leicester have also developed cotton manufactures, Lancashire is still the heart of the industry. A ring of towns—Bury, Oldham, Accrington, Bolton, &c.—round Manchester engage in weaving, spinning, textile printing and dyeing, and Manchester remains the centre for the distribution of the manufactured goods, as Liverpool remains the centre of the distribution of the raw

cotton. This is quite natural, for the bulk of our supplies of raw cotton comes from the U.S.A., and Liverpool is therefore the most convenient port for receiving and distributing purposes. The South-Eastern or Cotton States of the U.S.A. supply us with more than half our annual import; the rest comes from Egypt, India and Peru. The Egyptian crop is especially important, for the cotton is of the finest kind and the crop is usually large.

The question of our future supply of raw cotton is most important. It is not a good thing "to have all one's eggs in the same basket." The U.S.A. supply us, as we said, with over half of our raw imports. Yet there are already signs that the U.S.A. every year use up more and more of their own raw cotton supplies, as their textile factories increase in numbers. So before long we may expect a considerable decline in our imports from this source. This makes it all the more necessary for us to open up fresh markets. And why should not these be within the British Empire?

The following figures show distinct possibilities in this direction. We must see to it that these new sources of supply are exploited to the fullest extent.

ESTIMATED COTTON PRODUCTION IN NEW FIELDS IN THE BRITISH EMPIRE, 1917. (Statesmen's Year Book, 1919.)

Country.	Bales of 400 lbs.	Country.	Bales of 400 lbs.
Gold Coast	100	Nyassaland and Rhodesia	6,500
Lagos	7,800	Sudan	23,000
Southern Nigeria.	100	West Indies ...	3,000
Northern Nigeria.	3,900	Other countries...	4,000
Uganda	24,000		
British East Africa .	200	Total bales	72,600

Approximate value: £2,700,000.

When the cotton has been converted into manufactured goods it is shipped to countries all over the world. Owing to the convenient position of the Lancashire manufacturing towns with regard to the Aire gap across the Pennines, the goods can be shipped almost as easily from Hull on the East as from Liverpool on the West. Our best customers are our own Colonies, the Mediterranean countries, South America and China. Though we can more than hold our own in the export of the finer makes of cotton goods, in the cheaper kinds competition is becoming increasingly severe, especially from Japan, where there is plenty of very cheap labour. During the Great War many of our overseas markets were lost to United States and Japanese competition, and we shall have to work hard if we are to retain our position as the world's greatest cotton manufacturer and exporter.

(b) WOOLLEN EXPORTS.

Another textile export of great value is woollen goods, by which we mean three classes of article, namely, heavy woollen goods such as flannels, goods of a finer quality (such as serges), which we call "worsteds," and ready-made cheaper clothing or "shoddy." The woollen industry employs thousands of workers, and our exports of woollen manufactures annually bring in about £40,000,000.

As Lancashire has kept its superiority in cotton manufacture, so Yorkshire has done likewise in woollens, and to-day Bradford is still the centre of the industry. Yet some of the old woollen centres, such as Stroud and Witney, and some Scottish towns like Hawick, still retain their importance.

Our raw wool supplies come from a variety of countries—even Iceland and Persia send a certain amount—but besides our home-grown wool, which is

quite inadequate to meet our manufacturing needs, there are two great sources of supply, namely, the Argentine and Australia.

It is very satisfactory to know that 90 per cent. of our imports of raw wool are Empire-produced. Australia supplies half this amount, New Zealand ranks second, and South Africa, India and the Falkland Isles are all of them important producers.

The Argentine and the U.S.A. are every year consuming more of their own wool resources, so that we may expect a further extension of our Empire's wool exports. In 1918 the total number of sheep in the world was well over 600 million. In Australasia alone there were 105,000,000. To these we must add another 32 million sheep for South Africa and about the same number for the British Isles.

Our principal customers for manufactured woollen goods are the Colonies, South America and the Mediterranean countries.

SOMETHING TO DO.

Find out from the rainfall map in your atlas the average amount of rainfall of Manchester, or Lancashire as a whole.

If you do not know, ask your teacher why rainfall is important to the cotton industry.

Notice the streams flowing from the Pennines westwards. Recall to your mind why these were important in early factory days. Locate the Lancashire coalfield.

Find the course of the Manchester Ship Canal—measure its length.

Refer back (if necessary) and find whence Liverpool gets its raw cotton supplies.

Write down the above facts in your note books, and head them "Some reasons for Lancashire's Cotton Industry."

SOMETHING TO MAKE.

1.—Trace the course of the 75° isotherm across Australia. Insert it and the 10″ and 20″ isohyets (lines of equal rainfall) on a blank map. Within these limits lie the chief sheep-rearing districts of Australia. On the same map mark off the Canterbury Plains, the Auckland district, and Tasmania (except extreme west). Shade these areas. Put a title to the map, "The Sources of Raw Wool in Australasia."

2.—A map of the chief wool markets of the world. Find the following towns, insert them in a blank map of the world; put a title to the map as above.

England ..... London, Bradford, Huddersfield.
France ..... Verviers.
U.S.A. ..... Boston.
Belgium ..... Antwerp.
South Africa..... Durban, East London.
Argentine ..... Monte Video, Buenos Aires.
Australia ..... Sydney, Adelaide, Fremantle, Brisbane, Geelong, Melbourne.
Tasmania ..... Hobart, Launceston.
New Zealand .... Dunedin.

SOMETHING TO DO.

On squared paper draw a graph of the following figures. Head it "Value of wool exported from Australia to her principal customers, 1910—1913."

Country to which Exported.	1910	1911	1912	1913
	£	£	£	£
United Kingdom	11,447,359	11,159,335	10,418,577	9,456,636
France	6,905,177	6,016,293	6,527,854	7,429,856
Germany	6,053,873	4,851,785	5,050,974	4,693,157
Belgium	3,084,847	2,552,282	2,480,348	2,386,892

(2) COAL EXPORT.

Coal, as you know, is the most important mineral because on the amount of coal available depend the various manufactures of a country.

Just before the outbreak of the Great War the total annual production of coal in the world was about 1,000 million tons. Of this quantity the U.S.A. produced 477 million tons, Great Britain 260 million tons, and Germany 172 million tons. France came fourth on the list with nearly 40,000,000 tons, so it is clear that the first three nations named contribute the bulk of the world's coal output. But the amount of coal raised is no indication of the amount that can be exported, because countries like France, for example, may require all the coal they produce for their own manufactures. So, in fact, we find that there are only three nations who can export coal on a large scale, namely, Great Britain, Germany and the U.S.A. Before 1914 these three countries exported annually about 67, 39 and 18½ million tons respectively. From this you will gather that we are the greatest coal-exporting nation in the world.

By our exports of coal we pay largely for the goods we buy from other nations. Remember this; it is most important, because if (as in 1920) we cannot produce enough coal to keep up our exports, we lose millions of pounds of money. (Our coal exports annually value over £100,000,000.) And this means that we cannot buy nearly so many imports; or to put it in other words, the purchasing power of our country is reduced.

As we export but 67 million tons out of our total production of 260,000,000 tons, you can see that we consume in this country something like 200 million tons of coal yearly. This vast quantity is needed to supply our factories and as fuel for railway engines

CHIEF COAL EXPORTS FROM THE UNITED KINGDOM, 1913.
(Figures show tons.)

and ships and other purposes. The coal used in our factories is, however, not of the same kind as most of that we export, which is known as steam coal. This gives out great heat with little smoke, and is most useful for " bunkering " purposes. Such coal is found in the South Wales coalfield, and Cardiff is the greatest coal-exporting port in the world.

Our coal industry employs well over a million miners, a greater number than that employed by any other country.

Let us see, now, who are our principal customers for coal. The map should make the position clear.

You will notice that we export most to the countries bordering the Baltic and the Mediterranean. This we should expect, for Scandinavia and such countries as Italy, for instance, have practically no supplies of their own. Naturally, the South Wales ports export most to the Mediterranean; the North-East and Lancashire and Yorkshire coalfields are best situated for the Baltic and North Sea trade.

SOMETHING TO MAKE—A MAP OF THE BRITISH ISLES COALFIELDS.

Using a geological map of the British Isles find out the chief coalfields. Insert them in a blank map. Put in the chief industrial centres. Write in red ink the main industry connected with each, e.g., Birmingham (Hardware).

(3) IRON AND STEEL EXPORTS.

These facts about coal naturally lead us to consider the last export we shall have space to deal with —iron and steel goods; or perhaps we had better state it more generally and say mineral and metal manufactures. Under this heading we include all kinds of machinery, particularly textile, engineering

and electrical machinery; railway locomotives and rails; every kind of ship; galvanised and corrugated iron; tin plates and hardware, particularly what we call "Sheffield" goods.

Now, to make all these things we require vast quantities of iron ore, coal and limestone for smelting purposes.

Of the last two we have ample supplies. The iron ore of this country is, however, not nearly enough for our wants, and so we have to import largely. Sweden and Spain have for long been our principal sources of supply, but in recent years we have had to import also from India, Brazil, Russia and Newfoundland.

The output of pig-iron—on which depends the production of steel—is a good test of the importance of a manufacturing country. In this respect we are not doing as well as formerly, and now—we are talking of normal times—the U.S.A., France and Germany all produce more than we do.

And, of course, we cannot export pig-iron in any quantity: we want it ourselves. Nevertheless, we make up for this deficiency by our large export of manufactured mineral and metal goods, which yearly amount in value to something like £80,000,000.

The Mediterranean countries are good customers for all kinds of machinery. Before 1914 Russia used to buy from us agricultural machinery. Egypt is always eager for iron and steel goods, for she is not a manufacturing country. Spain buys our ships. Our Sheffield goods are known the world over. India, Australia and the Argentine buy large quantities of galvanised and corrugated iron, which is really steel plates coated with zinc and which is manufactured in and exported from the South Wales ports. Young countries such as Brazil and the Argentine, which are developing their railways, send over here for all kinds of railway stock. South Africa and India do the

same. As we have seen, we are the greatest ship-builders in the world and supply most countries with all kinds of vessels. Battleships for Brazil it may be, or a floating dock for Chile, or oil-tankers for Russia, ships for the Argentine frozen meat trade, cargo vessels for the Spanish ore trade, and so on.

And, of course, our own mercantile marine must be supplied. In 1913 we built, exclusive of warships, over 1,000 vessels, 202 of which (amounting to 360,000 tonnage) we sold to foreign countries.

OUR CHIEF IMPORTS—FOODSTUFFS.

Now we have learnt something of the most important articles we can sell to our customers, let us see what they can sell us in return.

You will remember that we have already mentioned that we buy from them vast quantities of raw materials for our textile manufactures and also much iron ore. There are many other things we have to buy from them: Chemicals, tin, copper, lead, oil, timber and, of course, many articles of luxury. Above all, we have to feed ourselves, and this we can do only by importing largely from other countries. So, as foodstuffs are so necessary for us, suppose we fix our attention on these.

Let us divide foodstuffs into two classes: Those we get from lands in the temperate zone; those we get from tropical countries.

OUR WHEAT IMPORTS.

Now everyone must have bread to eat. Our wheat supply, then, is clearly the most important of all. We have long ago ceased to be able to raise enough wheat to feed our dense population, and every year, therefore, we have to import large supplies of this

cereal. Generally we import something like 50 million pounds worth of it. To this we have to add large quantities of barley, oats and maize—worth together another 20 to 30 million pounds—and four or five million pounds worth of flour. So that our food bill for cereals alone amounts annually to anything between 70 and 80 million pounds.

From what countries do we purchase this large quantity of foodstuffs? Before 1914 we had six great sources of supply, namely, Canada, India, Australia, Russia, The Argentine and U.S.A. Sometimes one and sometimes another of these countries would send us most, and as the harvests are at different periods in different parts of the world, we could always be sure of getting our supplies throughout the year. Moreover, a bad harvest in one country would be made good by our importing more from another country.

Since the Great War Russia has ceased as a source of supply; and this means to us a yearly loss of about 16,000,000 cwts. of wheat and of much barley and maize. So it is clear that we shall for some time have to increase our supplies by this amount from elsewhere. The U.S.A. is sending us all she can spare; The Argentine may be able to spare more, but with a rapidly-growing population this is not likely. Indian exports are not likely to increase very much, as so much of the Indian crop is needed for consumption in India. So it seems likely that we must fall back on Canada and Australia.

There are still millions of acres in Canada which could be, and have not yet been, brought into cultivation. With an increase of population it is certain that the Canadian supply could be much increased. The same holds good for Australia, where there are thousands of acres for future farming, both agricultural and pastoral. It is reckoned on first-class

evidence that about 28 per cent. of Australia—say 320,000 square miles, or six times the area of England—is fit for good mixed farming and has a climate suitable for white people. There is plenty of good land of a similar character to be developed in such areas as Rhodesia and British East Africa, and Mesopotamia may again be a great granary.

It is, of course, highly undesirable that we should have to depend so largely on foreign sources for our foodstuffs. We found out the inconvenience of this during the Great War, when the German submarine campaign so greatly imperilled our food supply. Nevertheless, it is difficult to see what else we can do. However much fresh land in Great Britain is taken into cultivation, we cannot grow nearly enough wheat, &c., for our own use, and in any case our climate is too uncertain for wheat growing, and our small field system not suitable for the use of machinery on a large scale. So we may take it that we shall have to continue to rely on imported foodstuffs.

The accompanying figure shows the main sources of our wheat imports in 1913.

And this is only another way of saying that we must continue to retain command of the sea if we do not wish to be starved out in time of war. Observe how sea-power is constantly cropping up in all kinds of questions where an island country like ourselves is concerned.

We have so far considered only cereals. We must add to these large imports of dairy produce and frozen meat: the import of eggs alone being valued at many million pounds annually. In 1913 the value of the imports of meat, fish, butter and cheese to this country was £27,000,000, New Zealand alone sending £8,000,000 worth.

FOOD IMPORTS FROM THE TROPICS.

Now let us turn to our tropical foodstuffs, which, as we might expect, are more of the luxury type. We could at a pinch do without such things as coffee, cocoa, rice and fruits: we should find it harder to do without tea, and especially coconuts, which are now all-important for the manufacture of margarine and which come from such places as India, Ceylon and the Pacific Islands.

The value of imported tea is about £11,000,000 annually, and it is satisfactory to note that India and Ceylon supply over 80 per cent. of this quantity. Coffee comes mainly from Brazil and Central America, cocoa from the same countries, West Africa and Ecuador.

Most important of all is sugar. Now this article is produced either from the sugar-cane which grows in tropical and sub-tropical countries, or from the sugar-beet which is cultivated in temperate climates such as those of Belgium, Germany, Austria and Russia. Since the Great War the sugar-beet producing countries have failed as sources of supply, so that the tropical crop of sugar is more important than it has ever been before. The chief sources of supply are the West Indies, British Guiana, Natal, Mauritius and Brazil, and in the Far East Java and Queensland. As a matter of fact, India grows more sugar than any other country, but cannot export owing to inferior methods of culture and organisation. If this crop could be more scientifically treated India might be able to export sugar and another valuable market would be added to our Empire supply.

Taking all things into consideration, it is plain that the supplies of our imported foodstuffs reach us mainly through two routes, viz., the Atlantic and the Suez. And this again emphasizes the importance of

Main Wheat Imports into the United Kingdom, 1913.

our controlling such vital strategical points as Aden, the Suez Canal and Gibraltar.

SOMETHING TO DO.

Read Kipling's "A Song of the English."
On a blank map of the world mark:—
(1) The chief tea; (2) the chief sugar-producing areas.

CONCLUSION.

Such, then, is a very brief outline of our trade in those staple commodities the history of whose growth has largely been our study in previous pages of this book.

In conclusion, it is abundantly clear that the future, the near future in fact, will be marked by colossal world-wide competition in trade. If we are to hold our own commercially we must set all our industries to work at "full blast"; we must develop our resources to the utmost. For it is on production, and on production alone, that commercial prosperity ultimately depends.

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